Washington State Department of Labor & Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 13 No. 12** **December 2010**

This Month's Question of the Month

In other than one-family dwellings, the branch circuits for pool-associated motors shall be installed in any of the following wiring methods, except _____. A) rigid or intermediate metal conduit B) reinforced thermosetting resin conduit C) flexible metal conduit D) Type MC cable listed for the location – *See the correct answer on page 2.*

Safety Tip of the Month!

Be aware of and avoid potential arc fault hazards. Wear appropriate personal protection equipment. Look for the arc flash labeling required by NEC 110.16.

L&I statistics show that for a five year period, at least 30 workers were hospitalized for serious burn injuries due to arc flash/blast events. Compensation for those claims exceeded $1.3 million and almost 1,800 days of lost work time.

Note From The Chief

The Governor recently issued Executive Order 10-06 that suspends all non-critical rule development and adoption through January 1, 2012. You may read the order at this link: http://www.governor.wa.gov/execorders/eo_10-06.pdf.

In response to Executive Order 10-06, the Department of Labor and Industries (L&I) is in the process reviewing all rules currently in the process of rule-making to determine which rule-making should move ahead and which should be delayed for a year. Once an initial determination is made, the information will be posted on our website.

The program's electrical inspectors continue to see installations where it is obvious that the contractor and/or assigned administrator have not done their necessary quality control. Here are some of the most common serious corrections encountered in October by our inspectors:

- NEC 110.3(b) – Didn't follow the manufacturer's instructions (228 total);
- NEC 210.8(A) – Missing or inoperable Ground Fault Protection (70 total);
- NEC 314.25 – Missing cover plates (39 total);
- NEC 210.4(B) – Missing tie handles on circuit breakers supplying multi-wire circuits (32 total); and
- NEC 406.11 – Missing tamper resistant receptacles (29 total).

As I have discussed in previous articles, these types of corrections are unacceptable and are solely a result of the electrician's decisions and a lack of quality control by the contractor/administrator. Contractors and administrators, please make certain these are not the type of corrections your company is receiving.

Electrical Board Position Available - Electrician

There is currently one opening for an electrician position on the Electrical Board. An applicant should be a certified electrician and not have ownership in an electrical contracting business. The position will expire July 7, 2014. Applications should be submitted to the Governor. Application information is available at:

http://www.governor.wa.gov/boards/default.asp

Installing Optional Standby Generators – The Right Way

Installing a generator system is potentially one of the most dangerous types of electrical installations to your family, employees, and the utility's linemen. Legally and safely installing a generator system is very specialized work that requires expertise and experience. Prior to making a generator system purchase, review the special edition *Electrical Currents* – October 2007. All the information in the article is still relevant and accurate.

You can find a copy at: http://www.lni.wa.gov/TradesLicensing/Electrical/files/currents/elc0710special%20.pdf

Everyone interested in having a generator system installed at their house or business is strongly encouraged to work with a legally licensed electrical contractor. Before beginning the work, get written bids from two or three electrical contractors and verify that each has significant experience installing generator systems. Ask for references. Then make certain your contractor gets an electrical permit and has an inspection to verify that the work was done correctly and safely.

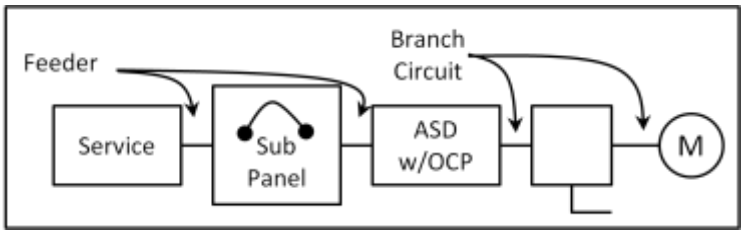
Make certain that if you are using a portable generator that you follow the manufacturer's instructions. It is imperative that you do not operate a portable generator inside a building or too close to windows or doors. Make certain the cord you use is large enough to supply the load you are powering. Protect the cord from damage and make certain your generator is capable of providing the power required for your limited load. Portable generators can only be used to power individual plug-in type appliances (e.g. refrigerator, individual heater, etc.). If you fail to properly install and use a portable generator, you and your family are at significant risk from asphyxiation, electrocution, and structural fire.

If you have installed a generator system, this year, without a permit and inspection, L&I will not assess any penalties if you proactively get the required permit and inspection before January 30, 2011. Protect your loved ones!

● NEC 430, Part X – Adjustable Speed Drive Systems

Part X was added in the 2005 NEC, but some installers and designers seem to be unaware of its requirements, especially in the area of overcurrent protection. One of the first things to determine is if the adjustable speed drive (ASD) contains overcurrent protection. This is a key question that must be answered before sizing conductors and overcurrent protection and determining what part of the circuit is or is not a feeder. By definition, NEC 430.2, an ASD includes a power converter. This is important point when sizing conductors to the ASD.

First, let's look at the definition of overcurrent protection in NEC 240.2. An overcurrent device is any device that, *"when interrupting currents in its current-limiting range, reduces the current flowing in the faulted circuit to a magnitude substantially less than that obtainable in the same circuit if the device were replaced with a solid conductor having comparable impedance."* This broad definition includes the normal overcurrent devices, fuses, circuit breakers, and thermal overloads; but, it can also include devices like an ASD where the current is limited, by any means. Most ASDs contain some type of overcurrent protection.



Second, let's look at the definition of a feeder in NEC 100. A feeder includes *"all circuit conductors between the…power source and the final branch-circuit overcurrent device."* If the ASD contains any type of overcurrent protection, the circuit from the power supply to the ASD is a feeder(s) – see the diagram. If the disconnecting means, shown in the diagram, contains fuses or is a circuit breaker, the circuit between the ASD and the disconnecting means will also be considered a feeder. For determining fees only, L&I does not consider a circuit a feeder until the last overcurrent protection exceeds 30 A.

NEC 430.122(A) requires the minimum ampacity of the branch/feeder conductors from the sub-panel to the ASD to be not less than 125% of the rated input of the ASD. Paragraph (B) says that if the ASD utilizes a bypass device – to allow full-speed operation – the ampacity of the ASD's supply conductors must be the larger of:

- 125% of the rated input to the power conversion equipment; or
- 125% of the motor full-load current rating as determined by NEC 430.6.

Per NEC 430.124, overload protection of the motor(s) supplied by an ASD must meet the following conditions:

- For an ASD w/o a bypass, it must be sized per the label on the ASD – additional protection is not required;
- For an ASD with a bypass, it must be sized per NEC 430, Part III in the bypass circuit; or
- For an ASD supplying multiple motors, it must be sized per NEC 430, Part III

Per NEC 430.128, the ASD's disconnecting means may be in the ASD or the incoming circuit and must be rated not less than 115% of the rated input current of the ASD.

● Answer to This Month's Question of the Month

C) flexible metal conduit. (See NEC 680.21(A)).

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ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 13 No. 11** **November 2010**

This Month's Question of the Month

Who is responsible for ensuring the total quality of an electrical installation? A) Inspector B) Electrical Contractor C) Electrician – *See the correct answer on page 2.*

Safety Tip of the Month!

Before the flood, go to the L&I Electrical website and click on Home and Business Owner Basics to get information about what to do before and after a flood that is critical to you and your family's safety. http://www.lni.wa.gov/tradeslicensing/electrical/

If your house or building floods walk around and see if any part of your electrical system was submerged. Replace or repair all flood damaged wiring and equipment and get it inspected before re-energizing your system.

Note From The Chief

Electrical inspectors are seeing more jobs – from a very small minority of electrical contractors – where the electrical contractor has a significant number of corrections or has missed one or two significant problems with their electrical installation. Last year, only 5% of all active electrical contractors received 40% of all corrections issued. This very small group of contractors negatively affects the ability of inspectors to quickly get to the inspections of other contractors' work. All electrical contractors and their assigned Administrator or Master Electrician are expected to do the quality control necessary to ensure that their job is ready for inspection. Ready for inspection means ready to be passed by the inspector. Inspectors are not expected to do the quality control for that small number of poorly performing contractors.

When inspectors find jobs where critical elements are incorrect (e.g. missing service bond connections, missing or inoperable GFCIs or AFCIs, etc,) or there are, in general, a significant number of corrections, the inspector may declare the job not ready for inspection. When that happens, the inspector will stop the inspection process and assess a trip fee for the re-inspection required because the contractor, or Administrator, or Master Electrician did not verify the job was ready for inspection. The contractor must then pay the assessed trip fee, make the corrections noted, and do the required quality assurance before requesting a re-inspection. When the inspector returns, the remainder of the job will be inspected, including the repairs for the corrections previously noted.

The job should be ready to be passed each time an inspection request is made.

Solar Photovoltaic Installations

The PV industry has been around for several decades and has been a very innovative industry. The first National Electrical Code article dedicated to PV systems was included in the 1984 NEC.

One of the biggest changes has been the recent rapid development of building integrated PV systems (BIPV). When a PV array or panel is a structural component of the outside shell of a building, it is considered to be a building integrated system. In the last few years, roofs, windows, and facades have been designed equally as a finished surface or structural component of a building and as a PV power source – building integrated system. Oftentimes, these types of PV panels and arrays cannot easily be identified as a part of a PV system. Building integrated systems can range from small residential to very large commercial installations.

Because of the cross-trades aspect of building integrated systems, some people are confused about who can and cannot install them. Think of building integrated PV systems in simplistic terms. There is a mechanical aspect and an electrical aspect. Because one aspect does not prevail over the other, the mechanical aspect must be done by a general contractor registered under RCW 18.27 and the electrical aspect must be done by an electrical contractor licensed under RCW 19.28. This might require one contractor or two depending upon how the contractor is licensed and/or registered. If the electrical contractor is also a registered general contractor, the electrical contractor can do the entire installation.

If one contractor is involved, that contractor may use a crew split between roofers and certified electricians. Because there are worker certification requirements for electricians and none for roofers, the contractor might decide to only use certified electricians to make the complete installation. However, this is not likely because of the different skill levels involved and the differential in labor costs between the two trades. When building

integrated systems are being installed, the electrical contractor must obtain the electrical permit before the PV arrays/panels are installed. The electrical contractor must do all of the electrical installation (e.g. wiring support, connections, etc.).

When the installation is non-electrical (e.g. roof brackets or stands that are not used as a grounding path), the work can be done by either a registered general contractor or a licensed electrical contractor. The electrical contractor, using certified electricians or properly certified trainees, must do the installation of all panels (except for building integrated as described above), wiring and other equipment that is used, in any way, to create, carry, or use electrical current.

● Fee Training Series – Miscellaneous

This is the seventh in a series of articles on selecting the appropriate permit fees for your work. This article will cover WAC 296-46B-906(7), (8), (9), (10), (11), (12), (13), (14), and (15).

Because of its limited use, Paragraph (6) will not be covered.

Paragraph (7) covers the various trip fees. The first fee item is requests by owners to inspect existing installations. The basic fee is $86.60 and allows up to one hour of inspection time. If the inspection takes more than one hour, the inspector will add a progress inspection fee. The additional progress fee is $43 .10 for each additional or part of ½ hour. This fee item can only be used by the property owner (i.e. no contractors, real estate agents, etc.). The remaining trip fees are related to penalties and will be assessed by the inspector as appropriate.

Paragraph (8) covers progress inspection fees. This fee item is only used by covered in the basic fee. The fee can only be used by the inspector.

Paragraph (9) is for plan review. This fee is only used by the plans examiner and is in addition to the normal inspection fee. This fee must be paid in full before the approved plans will be returned to the submitter.

Paragraph (10) covers travel expenses for out of state inspections. Travel costs will be based upon the time required by the inspector and travel expenses as allowed by Washington state per diem rate.

Paragraph (11) is used as a miscellaneous category for any item not covered by another fee line item. It is a portal to portal hourly rate per hour or part of an hour. The hourly rate is $86.60. Pre-scheduled inspections on weekends or after normal working hours must include portal-to-portal hours, adjusted for overtime when necessary, plus the regular line-item fee. This fee will be assessed by the inspector.

Paragraph (12) covers the fee for processing a variance application. This fee is due when the variance is submitted and is non-refundable.

Paragraph (13) covers marking of industrial utilization equipment by an inspector. This fee item is no longer relevant because the department no longer marks industrial equipment. It will be removed from the fee schedule and should not be used.

Paragraph (14) covers the purchase and inspection of Class B labels. Each book of twenty labels costs $237.70 and is not refundable. If re-inspection of a Class B label is necessary, a basic fee of $43.10 will be assessed by the inspector. The re-inspection includes the time from the previous inspection to the end of the re-inspection. If ½ hour is exceeded, the inspector will assess additional progress inspection fees.

Paragraph (15) covers the purchase of Provisional Permit labels. Each book of twenty labels costs $237.70 and is not refundable.

This is the final article in this series. Use the previous articles to review your permit fees. Remember that articles written before October 2010 used the previous fee schedule. When reviewing a previous article or buying a new permit, you should use the current fee schedule that became effective October 1st.

● Answer to This Month's Question of the Month

B) and C) Electrical Contractor and the Electrician. (The entities that are doing the installation have responsibility for the overall job. The inspector is responsible for a spot check/audit of the overall installation).

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Washington State Department of Labor & Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 13 No. 10** **October 2010**

Safety Tip of the Month!

Maintain & update your electrical systems.

Most electrical fires result from problems with "fixed wiring" such as faulty electrical outlets and old wiring *(U.S. Fire Administration)*.

Get a permit and electrical inspection for all new and changed wiring.

This Month's Question of the Month

What is the best way to communicate inspection request details to the inspector? A) Call the inspector, B) E-mail, C) Send a 255 character comment in an online inspection request, D) Leave a phone message – *See the correct answer on page 2.*

Note From The Chief

It is time for an update after the spring layoff of inspectors. We are doing our best to respond quickly to inspection requests and maintain a high level of compliance enforcement with the underground economy and contractors getting a competitive advantage by not following the law.

Even with the larger areas that each of our inspectors is required to cover, we are getting to 89% of all inspections within 48 hours of the inspection request. Over 85% of all our compliance activity is related to unlicensed electrical contracting, uncertified electricians, and failure to buy a permit and get inspection.

We have been and will continue using a "plan, do, check, and adjust" philosophy to find the most efficient and effective ways to provide the quality of service our customers expect and need.

Air Compressor Marking Requirements

This is a follow-up to an article published in May 2009 and will further clarify the options available when an inspector encounters an unlisted air compressor. But, because compressors are often manufactured in multiple configurations (e.g. tank mounted, skid mounted, and with multiple accessories, etc.) only a very few manufacturers use UL 1450 and list their equipment as a unit.

Listing is always the preferred method of documentation that the equipment is appropriate. If the compressor is not listed to UL 1450 by an approved electrical testing laboratory, the inspector has three options available:

1. The equipment may be approved by field evaluation;
2. If <u>all</u> components are listed, the inspector can inspect according to the NEC; or
3. The installer/owner may request a site specific variance request. The request must prove that all of the electrical components have been manufactured and installed in accordance with applicable standards.

New Fees Effective October 1, 2010

Do not forget to update your WAC book with the new permit/license fees. New WACs will not be printed. Fourteen insert pages (seven when printed double-sided) with all the new fees are available as direct replacements for the fee pages in the last (October 31, 2009-yellow cover) printing at:

http://www.lni.wa.gov/TradesLicensing/Electrical/files/WAC-RCW/Fees100110-replacement.pdf

Class A Permit Exempt List – Can You Replace More Than One Of Those Contactors?

The RCW definition of Class A, permit exempt, work has been in place since the 2003 legislative session. Many installers seem unaware that the items that are exempt are limited to only one of each item. The singular language was put into place to limit an installer who might attempt to do a large scale replacement without an inspection (e.g. re-fixture a complete house, replace all the controls on a motor control system, etc.). The definition says that replacement is limited to "a" contactor, relay, etc. This means a single contactor, relay, etc. on a single jobsite each day. If you are replacing multiples of a component or equipment on the Class A basic electrical work list, an electrical permit is required. However, because of the lack of understanding of this requirement, inspectors will use discretion when enforcing the permitting requirement at this time.

During the current rule making process, the program is reviewing the Class B rule to allow an electrical contractor to replace multiple Class A items by using a Class B label. All proposals will be reviewed by the Technical Advisory Committee (TAC) and the Electrical Board.

Fee Training Series – Miscellaneous

This is the fifth in a series of articles on selecting the appropriate permit fees for your work. This article will cover WAC 296-46B-906(5), Miscellaneous – commercial/industrial and residential. Most of the items in "Miscellaneous" are very straight forward; but, others require some explanation.

You will see "inspected at the same time" in several parts of the "Miscellaneous" section. It means all work must be ready so the inspector can complete the inspection in one single ½ hour visit. For example, if two thermostats are to be installed and an inspection request is made when only one is ready for inspection, the installer does not get to use the reduced fee of $13.40 for the second thermostat. Each one will cost $43.10. This logic can be applied to the other items where a reduced fee is allowed for inspection of multiple items made at the same time.

Class 2 or 3 low voltage or telecommunications systems' fees are calculated on a square foot basis similar to a new residence (see *Electrical Currents*, May 2010 edition). The first 2,500 square feet is $50.00 and each additional or part of 2,500 square feet is $13.40. For example, if the low voltage system is in a 7,600 square foot building, the total fee is $90.20 ($50.00 for the 1st 2,500 square feet plus 3 X $13.40 for the remaining 5,100 square feet).

The fees line for yard pole, pedestal, or other meter loops is only for meter installations remote from the service location. If the meter installation is inspected at the same time as the permanent service or with another part of the electrical installation, the fee for the meter is $36.10. If it is inspected by itself, the fee is $57.10.

When you are calculating the fees for a permanently installed generator, you must use the fees in the appropriate residential (section (1)(b)) or the commercial new/altered service or feeder (section (2)(a) section. See the July 2010, Electrical Currents for calculation fees for how to make those calculations.

The fee for inspecting permanently installed transfer equipment for a single portable generator connection is $79.40 is in addition to any other required fees. This fee applies to both residential and commercial installations. For portable generators and equipment, the fees for temporary services/feeders in section (3) should be used.

Annual permits are allowed for commercial and industrial facilities. Annual permits can only be used by the facility owner who has qualified maintenance electricians or an electrical or telecommunication contractor that has an annual maintenance contract for the facility.

- See WAC 296-46B-901(14) for a description of the work covered by an annual electrical permit. For electrical work, the fee is based upon the number of electricians available to do electrical work. Supervisors are counted as an electrician if they participate in doing the work.
- See WAC 296-46B-901(13) for more information about annual telecommunication permits. Annual telecommunication permits can only be used for telecommunication circuits. For telecommunication work, the fee is based upon the portal-to-portal hours necessary to complete the inspections.

The fee for "ditch cover inspections only" is required whenever the inspection is only for ditch cover. This fee is in addition to other required fees. For example, if you are installing a new 200 ampere underground feeder to a second building at a residence and need a twenty minute ditch cover inspection, between the two buildings, before the feeder work is complete the total fee, for the job, is $136.50 ($93.40 for the 200 ampere feeder plus $43.10 for the separate ditch inspection). If the underground portion of the feeder is inspected with the rest of the feeder, the underground only portion of the fee is not required and the total fee for the feeder would be $93.40. The fee, per half-hour, for ditch cover inspections can also be used when an underground conduit or wiring is installed for future use and is not being connected to an active electrical system.

With all fees, it is important to remember that if the allowed number of progress inspections is exceeded, additional progress inspection fees will be assessed. Remember, inspections are counted in ½ hour increments (e.g. 70 minutes equal 3 inspections for fee purposes). See the May 2010, *Electrical Currents*.

Answer to This Month's Question of the Month:

C) Send a 255 character comment in an online inspection request. (Many inspectors work directly from the field and inspections are often shifted from one inspector to another. The online comment is the preferred method of communication).

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Washington State Department of Labor & Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 13 No. 9** **September 2010**

This Month's Question of the Month

Conductors installed on the outside of buildings where AC systems operate at less than 50 volts are required to be grounded when they are run as _____ conductors. A) overhead, B) underground, C) IGS, D) all of the above – *See the correct answer on page 2.*

Safety Tip of the Month!

Stay in control!

Do not use a trigger hold button on a power tool, ever.

Note From The Chief

Your opportunity to submit WAC rule proposals is quickly approaching. The proposal period is from September 7th through October 8th. For details, go to the *What's New* link, then the *Electrical Rule Development* link on the electrical Web site at:

http://www.lni.wa.gov/tradeslicensing/electrical/

The program continues to try to reduce the negative impacts of the underground economy and contractors who attempt to gain a competitive advantage by not following the law. In July, 269 or 86% of the citations and warnings issued were for no electrical contractor license, no electrician certificate, failure to buy and electrical permit, or an associated issue. All these violations negatively impacted contractors who follow the law and potentially were installed in an unsafe manner that would place the consumer at risk of fire or shock hazards.

Help us protect the general public and your business. Work with our ECORE compliance team and inspectors to ensure installations are made according to code by qualified contractors and electricians. The ECORE team finds contractors and electricians who do not follow the law and compete with an unfair advantage. If you want to do your part and protect your interests by referring illegal activity, you may contact the ECORE team at:

Tony Bierward	(360) 902-4987	(360) 471-0588 (cell)	Southwest WA
Phil Jordan	(509) 324-2542	(360) 471-0691 (cell)	Spokane – Eastern WA
Jack Oxford	(206) 835-1130	(360) 471-0746 (cell)	King County and NW WA

New Electrical Fees

Effective October 1, 2010, Electrical permit and licensing fees will be increasing. We recently completed the public comment and hearings that are required before making changes to the WAC. Very few comments were received. There were more comments in support of the increase than against it. While we recognize that any increase in these tough economic times is difficult, we believe this increase is necessary to maintain the level of service we are now providing.

As you know, we have reduced our staffing by over 30% in the past year and made other cost saving changes. The staff reductions have made it much more difficult to cover the state's inspection workload effectively. In remote areas, especially, we are unable to deliver inspections as quickly as in the past. A further reduction in our ability to respond quickly to inspection requests would have an unacceptable impact on the ability of our customers to get their projects completed. Hopefully, this increase will allow us to continue to provide the level of service that our customers need. The new fees are available on the electrical Web site at:

http://www.lni.wa.gov/rules/AO10/21/1021Proposal.pdf

Electrical Permit Refund Requests – When Are They Allowed?

Make certain that you are buying your electrical permit from the correct jurisdiction. All electrical inspection authorities are routinely asked to refund permit fees for permits that were purchased from the wrong jurisdiction. WAC 296-46B-901(12) limits refunds for electrical permits. Refunds from L&I are not allowed for:

- Expired electrical permits
- Electrical permits where the electrical installation has begun; or
- Any electrical permit where an electrical inspection or electrical inspection request has been made.

Don't spend your time and money buying permits that are unnecessary. Before buying a permit, make certain that you will actually do the work and that you buy the permit from the jurisdiction where the work will be done.

Fire System Certification Requirements

It has come to L&I's attention that some local fire jurisdictions are requiring NICET II certification for designing, installing, testing, and maintaining fire detection and sprinkler systems. The electrician's law, RCW 19.28.211(4) specifically gives an appropriately certified electrician the right to work within their defined scope without additional proof of competency, permit, or fee. Local jurisdictions cannot add requirements for electrical work.

Local jurisdictions may have additional requirements for any work that is not electrical in nature (e.g. electrical – installing or removing devices/wiring/equipment, connecting or disconnecting wiring, etc.).

Fee Training Series – Temporary Services, Concert And Stage Productions, Irrigation Systems

This is the fourth in a series of articles on selecting the appropriate permit fees for your work. This article will cover WAC 296-46B-906(3), Temporary construction services stage or concert productions and (4) Irrigation machines, pumps, and equipment.

Temporary systems – There are restrictions on when an electrical installation is considered to be temporary. WAC 296-46B-590 restricts temporary construction installations to being used only for construction purposes. The temporary construction service must be disconnected when the permanent service is connected.

Fees are calculated based upon the service or feeder size. For the first service or feeder, you should use the Service/Feeder column in WAC 296-46B-906(3) to calculate the permit cost for the first service/feeder. For each additional feeder, use the Additional Feeder column. For example: If your temporary system has a 200 ampere feeder and two 100 ampere feeders, the total permit fee is $113.60 (i.e. 200 ampere feeder is $64.40 plus 2 – 100 ampere feeders at $24.60 each). All branch circuits are included in the service/feeder fee.

If your temporary stage or concert inspection is outside normal business hours, a portal-to portal fee of $76.70 per hour will be assessed. Notice of the off-hours inspection request must be made in time to allow the supervisor time to schedule the inspection or a callback minimum of three hours will be assessed. The callback minimum is included in the portal-to-portal rate. To avoid the callback minimum, you must request your off-hours inspection no later than one working day prior to the day you need the inspection. The final fee is the normal fee, the portal-to-portal fee, or if applicable, the callback minimum, whichever is greater.

Using the example above, for an evening concert inspection that takes two hours, portal-to portal and you requested the inspection more than one working day prior to the inspection, the fee would be $153.40 (i.e. 2 hours portal-to-portal – 2 X $76.70), not the $113.60 calculated fee. If you request the inspection less than one working day prior to the inspection, the fee would be $230.10 (i.e. 3 hours callback minimum – 3 X $76.70) even though the portal-to-portal time was only two hours.

Irrigation machines, pumps, and equipment – You should use paragraph (4) to calculate the permit fees for irrigation machines that use sprinkler towers. The service or feeder(s) supplying the tower is calculated using paragraph (2) Commercial/Industrial as described in the August *Electrical Currents*. In addition to the service/feeder(s) fee, each tower is charged separately. If the towers are inspected at the same time as the service/feeder(s), the fee is $5.50 per tower. If a tower(s) is inspected separately from the service/feeder(s), the fee for 1-6 towers is $76.70 and each additional tower is $5.50.

For example: You install a 200 ampere feeder from an existing service. There is a sub-feeder supplying a 40 ampere pump and the irrigation system consists of fifteen towers. If the complete installation is inspected at the same time, the total fee is $233.80 (i.e. 200 ampere feeder - $100.70 plus 40 ampere feeder - $50.60) plus 15 towers at $5.50 each - $82.50).

If the towers are inspected separately from the feeders, the total fee is $277.50 (i.e. 200 ampere feeder - $100.70 plus 40 ampere pump feeder - $50.60 plus separate inspection of 1-6 towers at $76.70 plus 9 additional towers at $5.50 each - $49.50).

Answer to This Month's Question of the Month:

A) overhead (see NEC 250.20).

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Washington State Department of Labor & Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 13 No. 8 SE** **August 2010**

SPECIAL EDITION

New Electrical Code And Other Possible WAC Changes

The 2011 version of the National Electrical Code (NEC) will be published this month. This rule development process will evaluate the 2011 NEC for appropriateness with Washington's needs and for economic impacts before implementing the 2011 NEC. This rule development process will include possible modification to all sections of WAC 296-46B.

The Department Is Seeking Stakeholder Input For Proposed Rule Changes

Any stakeholder in the electrical industry may make proposals for additions and/or revisions to the Washington Administrative Code WAC 296-46B – Electrical Safety Standards, Administration, and Installation electrical rules. Proposals, from stakeholders, may be submitted from September 7, 2010 through October 8, 2010. Proposal submission guidelines are detailed below.

Rules are developed to aid both stakeholders and the department in clarification or enforcement of the intent of the electrical statute. Technical changes require evidence of a specific problem and substantiation that the proposal will provide a solution for that problem.

The department is responsible and has final authority for developing all rules. The department will act as the correlating body during the rule development process and may at any time promote rule change as necessary to accommodate statutory change or department policies or procedures.

Proposals For Change

The form shown in this edition must be used to submit rule proposals for the 2011 revision cycle. An electronic Word version of the form is available on our Rule Development page at:

http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/RuleDev/default.asp

Industry proposals **must be received from 12:01 AM September 7, 2010 through 11:59 PM October 8, 2010**. The submitter may submit a proposal(s) by:

- Sending the proposal(s) as an email attachment to ***mailto:ElectricalWAC@lni.wa.gov***; or
- Mailing a compact disc containing the proposal(s) to Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460.

Proposals will not be accepted before or after these dates. **All proposals** to WAC 296-46B **must be made electronically** using the form supplied by the department. All proposals must clearly identify original language as "new text." Proposed revisions should include the relevant existing text and should use the legislative format (i.e. Use underscore (or underlining) to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~)). **Proposals not submitted according to these instructions will be rejected.**

Keep Informed

There will not be a specific mailing list for this WAC process. Special WAC update postings will be maintained using the Electrical Program's *Electrical Email List,* internet website, and *Electrical Currents* newsletter.

The best way to stay informed of the WAC process and other electrical issues is to join the *Electrical Email List* at:

http://www.lni.wa.gov/Main/Listservs/Electrical.asp

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Technical Advisory Committee (TAC)

The TAC process has proven to be very valuable in past years. The department will again appoint an advisory General TAC made up of experts and interest group representatives to review and make **recommendations** on proposals from the electrical industry.

Persons interested in becoming TAC members must submit a letter of interest for specific positions to the Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460 **to be received from September 7, 2010 through October 8, 2010**. The letter should show constituency support for the prospective member. All applications will be evaluated to determine that the applicant meets the requirements for the position.

In order to keep the size of the TAC to an efficient and effective number, the committee will be limited to 30 voting members. The TAC makeup will be based on an equitable distribution relative to proportion of involvement within the electrical industry in Washington. TAC membership provides an opportunity for everyone interested in the Electrical Program's WAC development to participate in the process.

If necessary, each successful candidate may have an alternate attend the TAC meeting. There will be no formal alternate assigned by the department. Any TAC member that is absent must notify the Chief Electrical Inspector of the alternate's name one week prior to the TAC meeting. Failure to make the required notification will result in the position being vacant during the meeting.

The TAC – Process

The TAC will make recommendations on industry proposals and identify proposals that may have an economic impact on other specialties, small businesses, construction costs, or the cost of enforcement. Members who know they will be absent from a TAC meeting should make every effort to send an alternate. The TAC must review and evaluate proposals based on the need:

- To address a critical life/safety need;
- To address a specific state policy/statute;
- To maintain a fair competitive environment;
- To address a unique character of the State; or
- To correct errors and omissions.

The TAC will operate on a majority basis. A majority vote in support of a motion, of members in attendance, will be considered as significant support for the motion made on a specific proposal. The TAC can propose amended language to a proposal. All voting members share an equal vote. The department will consider all TAC recommendations.

2011 WAC Revision Process – Proposed Sequence Of Events

- **September 2010** – File CR 101 – pre-proposal statement of inquiry
- **September 7 through October 8, 2010** – Accept proposals from stakeholders to: amend or add to the existing WAC
- **September 7 through October 8, 2010** – Accept applications for TAC
- **November 29, 2010 (possible 2nd day)** –TAC meeting, Tukwila L&I office
- **Spring 2011** – File CR 102 –rule filing (opens the official required public comment period)
- **Spring 2011** – Public hearing(s) & Electrical Board review
- **July 1, 2011** – Effective rule

General TAC – Membership

Chairperson– Chief Electrical Inspector (non voting)

2	Electrical Board Members (non voting)	1	WA Manufacturing Business
1	Training School/Continuing Education Provider	1	Electrical Engineer
1	JATC	1	Electrical Testing Laboratory
1	Electrical Manufacturer Representative	1	Utility
1	L&I Inspection (Supervisor & Inspector)	10	Electrical Contractors
1	City Regulator (Supervisor & Inspector)	10	Electricians
1	Plumber (Contractor or Worker)		

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Notes:

- Contractor positions must be filled by a licensed electrical/telecommunications contractor or representative of an electrical contractors' association in Washington representing that specialty.
- Electrician positions must be filled by a certified electrician who is not an owner in an electrical contracting business.
- The AD HOC contractor and electrician positions must be filled by a specialty not otherwise represented on the TAC.
- The plumbing position must be filled by a registered general or plumbing contractor or a representative of a plumber contractor's association in Washington or certified journeyman plumber.

Methodology for Determining the Number of Electrical Contractor and Electrician Members						
Active Licenses & Certificates	**# of Contractors**	**% of All Licenses**	**# of TAC Members**	**# of Electricians**	**% of All Certificates**	**# of TAC Members**
1	2,740	51%	5	15,620	58%	6
2	314	6%	0	2,352	9%	1
3	124	2%	0	488	2%	0
03A	63	1%	0	378	1%	0
4	87	2%	0	232	1%	0
6	557	10%	1	2,370	9%	1
06A	810	15%	2	3,475	13%	1
06B	12	0%	0	69	0%	0
7	108	2%	0	1,329	5%	0
07A	16	0%	0	76	0%	0
07B	76	1%	0	377	1%	0
07C	0	0%	0	13	0%	0
07D	39	1%	0	188	1%	0
07E	5	0%	0	110	0%	0
9	383	7%	0		0%	0
10	25	0%	0	52	0%	0
Ad Hoc Group	1,252	23%	2	3,312	12%	1
Total	**5,359**		**10**	**27,129**		**10**
Notes:	<9% of Licenses/Certificates joins the Ad Hoc group					
	The Ad Hoc group will be filled on an equitable base with an emphasis on representation closely following the % of licenses, with an effort to fairly represent the different specialties.					
	Unfilled positions will remain vacant					

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PROPOSAL FORM for 2011 WAC 296-46B Rule Changes

Mail CD to:

Chief Electrical Inspector
Department of Labor and Industries
Electrical Section
PO Box 44460
Olympia, WA 98504-4460

Email to: *mailto:ElectricalWAC@lni.wa.gov* as an attachment

FOR L&I USE ONLY

Specific Rule #:

Date Received:

NOTES:

1. All proposals must be **received from 12:01 AM September 7 through 11:59 PM October 8, 2010**.
2. Limit each proposal to a single rule section. Use a separate copy for each proposal.
3. **ENTER TEXT ONLY IN THE UNSHADED SPACES ON THIS DOCUMENT – SAVE AS A NEW FILENAME BEFORE RETURNING**

Date submitted: _____ **Name:** _____

Representing: _____ **Telephone:** _____

Mailing Address: _____

Email Address: _____

1. Proposal: *Include new or revised wording, or identification of wording to be deleted. Proposed text should be in legislative format. Use underscore to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~).*

2. Statement of Problem & Substantiation for Proposal: *Note: State the problem that will be resolved by your proposal and substantiation for your proposal.*

3. Check one: ☐ This proposal is original material ☐ This proposal is not original material

(END OF PROPOSAL)

Washington State Department of Labor & Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 13 No. 8** **August 2010**

This Month's Question of the Month

For a photovoltaic power source with a photovoltaic system voltage over 50 volts the DC circuit system grounding connection shall be made at _____ on the photovoltaic output circuit. A) the source end, B) the load end, C) any single point, D) the grounding terminal – *See the correct answer on page 2.*

Safety Tip of the Month!

Except in an extreme situation – DO NOT work on energized electrical circuits!
Lock them out!
Tag them out!
Check for Power!

Note From The Chief

We are getting closer to seeing the publication of the 2011 National Electrical Code. We will be opening the electrical WAC for review and proposals to adopt the new NEC and make other changes. Proposals from external customers will be accepted from September 7th through October 8th. As in the past, the Technical Advisory Committee (TAC) will be convened to review all proposals and provide a recommendation to the department. The TAC is a large committee representative of a general cross section of the electrical industry. The TAC will meet in late November. Public hearings will occur in spring 2011. The Electrical Board will also review and make a recommendation to the department. Because of the need to implement 2010 legislative changes, the rule must be completed and effective on July 1, 2011.

A special edition of the *Electrical Currents* newsletter will be published to explain the WAC process, provide a proposal form, and advertise for membership on the TAC committee. To receive the first update and to stay current, be sure you are on the program's Electrical E-mail List. To join the list, go to:

http://www.lni.wa.gov/Main/Listservs/Electrical.asp

All members of the electrical industry in Washington are encouraged to become involved in the rule revision process. If you have suggestions for change, you should submit them as described in the September Special Edition *Electrical Currents*. If you have some time, put your name in for TAC membership and provide your input.

Electric Vehicle Charging

More electric cars will be here soon. Electrical contractors, electricians, and electrical Inspectors will soon be seeing an increased number of charging stations for those vehicles. Charging will range from a simple outdoor receptacle to more complex credit card actuated charging equipment. The scope in NEC Article 625 includes the conductors and equipment external to an electric vehicle that connect the vehicle, by conductive or inductive means, to a supply of electricity and the installation of equipment and devices related to electric vehicle charging.

Here are some essential things to consider when installing or inspecting a charging station or receptacle:

- The charging equipment must be listed or field evaluated by an approved electrical testing laboratory. At this time, we are not aware of any small vehicle charging units that are listed.
- If the charging supply is 125 volts, 1Ø and 15 or 20 amperes, a cord and plug connection is acceptable.
- Load calculations must consider the vehicle charging to be continuous duty. There is no de-rating allowed. Be wary of simply adding a receptacle on an existing circuit. You must consider the existing load and the vehicle charging load for the circuit.
- An interlock to prevent the charging receptacle from being energized when the vehicle is disconnected is not required for 125 volts, single phase, 15 or 20 ampere receptacles.
- Vehicle charging in outdoor locations must not be less than 2' or more than 4' above grade.
- The 2011 NEC will have some changes to the current article.

Fee Training Series – Commercial And Industrial

This is the fourth in a series of articles on selecting the appropriate permit fees for your work. WAC 296-46B-906(2), Commercial/Industrial, is separated into 4 sections. When determining permit fees:

- Paragraph (a) is used for new services and feeders, including their branch circuits.
- Paragraph (b) is used for altered services and feeders, not including any branch circuits.

- Paragraph (c) is used for branch circuits only.
- Paragraph (d) is used only for over 600 volt installations.

For large commercial and industrial projects, "inspected at the same time" means that services, feeders, and their branch circuits may be inspected on a progress basis for the project. There is no definition for "large" in the WAC or RCW. For the purposes of calculating fees, all new service and/or feeder projects may use paragraph (a).

The total fee must not be less than the number of progress inspections units (i.e. one-half hour increments) times the progress inspection fee ($38.20) in subsection (8) of the fee schedule. For example, if a 100 ampere feeder or service is installed at the basic permit fee of $82.70, two progress inspections are allowed. The third progress inspection will be assessed an additional fee of $38.20 for a total fee of $120.90.

All new service fees are calculated using the "Service/Feeder" column. If there is no new service, the largest new feeder uses that column. For any additional feeder use the "Additional Feeder" column. For example, if you are installing a 600 ampere new service, two 200 ampere feeders, and one 300 ampere feeder, the total permit fee will be $431.40 (600 ampere service - $225.90 plus two 200 ampere feeders – 2 X $64.40 = $128.80, plus one 300 ampere feeder - $76.70).

The fees for a new service or new feeder include all branch circuits being supplied directly by the service or feeders. If the branch circuits are not supplied directly, you must use paragraph (2)(c) to calculate the branch circuit fees. If there is more than one new service, all the service fees must be calculated using the "Service/Feeder" column. For example, if you are installing a 1,200 ampere service and a 100 ampere service, the total permit fee will be $471.70 (1,200 ampere service - $389.00 plus 100 ampere service - $82.70).

The fees in paragraph (2)(b)(i) are used to calculate the fees for altered services and feeders. These fees do not include any branch circuits. They are intended only for the repair/replacement of damaged conductors or equipment. Paragraph (2)(b) is normally used only when repairs are necessary due to damage from storms, etc.

Paragraph (2)(b)(ii) fees are used to calculate the fees when the damage is limited to the maintenance or repair of a meter, overhead mast, or service lateral riser. Paragraph (2)(b)(ii) must not be used if the service entrance conductors or panelboard need repair or replacement. If the service entrance conductors or panelboard need repair, you should use the fees in paragraph (2)(b)(i).

For calculating the fees for branch circuits not included in paragraph (2)(a), you should use the fees in paragraph (2)(c). Branch circuit fees are calculated per panelboard. The total cost of the circuit alterations in a panel must not exceed the cost of a new feeder of the same rating in paragraph (2)(a). For example, if you are adding 20 branch circuits to a 100 ampere panelboard and 3 circuits to a 200 ampere panelboard, the total fee will be $147.70

- The fee for the 20 circuits in the 100 ampere panelboard paragraph (2)(a) is $82.70, the paragraph (2)(c) calculated fee is $64.40 plus $82.50 – additional 15 circuits or $146.90. The fee in paragraph (2)(a) is smaller and is the fee that should be used - $82.70.
- The fee for the three circuits in the 200 ampere panelboard paragraph (2)(a) is $100.70, the paragraph (2)(c) calculated fee is $64.40 for the first five circuits. The fee in paragraph (2)(c) is smaller and is the fee that should be used - $64.40).

Paragraph (d) is a $64.40 surcharge that should be added to any permit where a service, feeder, or circuit is being permitted that is over 600 volts. There is only one surcharge per permit. There is no additional surcharge for each service, feeder, or circuit.

Remember that, for any permit, the total permit fee must equal or exceed the progress inspection rate (i.e. each one-half hour of inspection times $38.20).

● Answer to This Month's Question of the Month:

C) any single point (see NEC 690.42).

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Washington State Department of Labor & Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 13 No. 7** **July 2010**

This Month's Question of the Month

Where operating at less than 50 volts, AC systems are required to be grounded where supplied by transformers if the transformer supply system is ____. **A)** bonded, **B)** grounded, **C)** ungrounded, **D)** isolated. *See the correct answer on page 2.*

Safety Tip of the Month!

Read the manufacturer's instructions on all products. They contain critical safety and use information that can prevent injury and death.

Then, follow those instructions!

Note From The Chief

During the past year, Washington has continued to see a very sluggish construction economy. This summer, electrical work has picked up only slightly over last year. As with other parts of the construction industry, L&I's Electrical Program has seen a large downturn in inspection activity. As a result, we have been forced to reduce staffing by about 32% or 60 staff including 52 inspection or technical staff members. This has dramatically affected how we must now do business.

We are consolidating inspections to create more full inspection days for inspectors. This may cause some more remote inspections to be delayed longer than in the past. We are using computer systems more efficiently to gain more time for inspectors to be in the field. Many inspectors now begin their day without going to their office. This gains about 1 ½ hours each day for more inspection time, but reduces the time the inspector is available for code and other questions in the office. We have incorporated other small but significant changes into our way of doing business that will help the inspectors get to more jobs quicker than in the past.

It is critical that everyone in the electrical industry do their part in making the inspection process as efficient and effective as possible. Providing good addresses, directions, and access is critical to helping the inspector get to more jobs quicker. Taking responsibility for your work and reducing corrections is also very important. As noted in the May *Electrical Currents*, only 20% of all electrical contractors caused 74% of all reinspections.

The program's Correction Reduction Initiative will continue next year and in July, a new list of contractors will be developed for the coming twelve months. The group will include all contractors who have more corrections per inspection that the average electrical contractor. Because the need to reduce corrections is more important than ever, the program will be more proactive in helping all contractors reduce their corrections and the related reinspections. For instance, we will be more closely watching for contractors who routinely have the same type of corrections on their jobs. We will be contacting and working with those contractors to reduce their repeat violations. If repeat violations are not reduced, stronger action may be necessary. Use the initial contacts to improve the quality of your jobs, while saving you and the Electrical Program time and money.

Is That Service Temporary or Permanent?

Some electrical contractors are installing an electrical service, for use during construction, very early in the construction process. A service will be considered temporary if the service is not complete and ready for permanent use. The temporary service must have a switched light for illumination, grounding and bonding appropriate for a temporary service, and an appropriate construction receptacle circuit(s) (i.e. GFCI, etc.). The temporary service requires a separate permit fee and will be inspected as a temporary service separate from the inspection of the permanent service.

When this type of temporary service is installed, the permanent service must be permitted under a separate permit fee – on the same or different electrical permit – and inspected for permanent service. The temporary and permanent service may utilize all or some of the same equipment. For a service to be considered permanent, the service must be complete and ready for permanent use when inspected. All temporary wiring and devices not intended for use in the permanent system must be removed. All grounding and bonding must be complete for all mechanical systems, building structural steel, and any grounding grids/electrodes that are a part of the final grounding/bonding system.

Retrofitting Signs With LEDs

Sign contractors are often replacing the illumination in channel-letter – pan-channel – signs with an LED illumination source while the sign remains installed on the jobsite. The sign contractor will have a contract with an electrical testing laboratory to list signs and is responsible to ensure that the sign meets all listing requirements. Retrofitting with LED illumination requires the sign contractor to remove the original neon, transformers, and associated high voltage wiring before replacing the neon system with a low voltage LED system listed for the purpose and installed in accordance with that listing. The retrofit eliminates the high voltage hazards associated with the neon lighting system and reduces the power consumption of the sign by about 90%.

NEC 600.3 requires listing and installation in compliance with the listing unless special permission is granted. The department will allow licensed electrical sign contractors to do the retrofit from neon to the LED illumination source at the jobsite, with the sign in place, so long as the sign contractor provides physical access to make a visual inspection of the LED components and provides, for use by the inspector during the inspection, the manufacturer's installation instructions and listing documentation for the LED system components. Owners or other types of contractors are not allowed to perform this type of retrofit.

Fee Training Series – Mobile or Modular Homes and RV Parks or Sites

This is the third in a series of articles on selecting the appropriate permit fees for your work. WAC 296-46B-906(1), Residential, is separated into six sections. Paragraphs (e) and (f) are the primary sections to use when determining the permit fees for your mobile or modular home, mobile home park, or recreational vehicle park or site.

Paragraph (e) covers the service and feeder fees for individual mobile homes and modular homes that are not installed in a park. The title of (e) will be clarified in the upcoming change to the electrical WAC to remove the reference to mobile home parks and RV parks. The fee for a mobile/modular service is $50.60 (see (e)(i)). The fee for a mobile/modular home feeder is also $50.60 (see (e)(i)). If both are inspected together, a discounted rate of $82.70 is available (see (e)(ii)).

Paragraph (f) covers the fees for services and feeders for mobile and RV parks. When there is no master service – one service supplying multiple mobile homes or RVs, the first individual site service or feeder fee is $50.60 (see (f)(i)). For each additional site service or feeder, inspected at the same time as the first site service or feeder, the fee is $32.00 (see (f)(ii)). For example, if you have two site services and they are inspected at the same time, the fee is $82.60 ($50.60 for the 1st site service, plus $32.00 for the additional service). If the two site services are inspected separately, the fee is $101.20 ($50.60 for each site service). Another example – you have two site services with a feeder supplied by each service. All are inspected at the same time. The total fee is $146.60 ($50.60 for the 1st service, and $96.00 for the remaining service and 2 feeders). If the 2 services and feeders are each inspected separately, the fee is $202.40 ($50.60 each).

When there is a master service supplying the sites in a park, the note in paragraph (f) says to use the fees in subsection (2) Commercial/Industrial. For example, if a new 800 ampere service is installed to supply power to a 400 ampere feeder, and to a 200 ampere feeder supplying power to a clubhouse. The 400 ampere feeder supplies two sites that are inspected at the same time. The total fee is $515.80 ($292.10 for the 800 ampere new service, $76.70 for the 400 ampere feeder, $64.40 for the 200 ampere feeder, $50.60 for the 1st site, plus $32.00 for the 2nd site - the two sites are inspected at the same time). If the two sites are not inspected at the same time, the total fee is $534.40 (same as the previous example except the fees for the two sites is $101.20).

If a 2nd 400 ampere feeder is installed at a later date to supply additional sites, the fee is $193.80 (see (2)(a)). The fee is higher than for the original 400 ampere feeder because the 2nd feeder is being inspected separately from the original work.

For an existing park where the service/feeder is altered or repaired, use (2)(b)(i) to calculate the service/feeder fees. For example, if the park describe above is existing and the 400 ampere feeder is altered or repaired, the fee for the feeder is $193.80. For an existing park where the meter or mast is repaired and there are no alterations to the service or feeder, the fee is $70.30 regardless of the ampacity of the service or feeder (see (2)(b)(ii)).

Answer to This Month's Question of the Month:

C) ungrounded (see NEC 250.020(A)). **Correction** to June's answer – The answer should have been **B)** 20.

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Washington State Department of Labor & Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

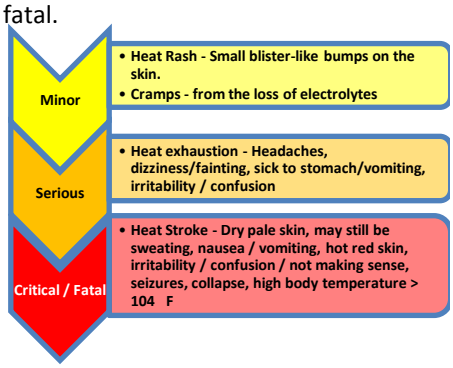
Ron Fuller, Chief Electrical Inspector | **Vol. 13 No. 6** | **June 2010**

This Month's Question of the Month

An appeal of an electrical citation must be received by the department within _____ days, along with the appropriate appeal fee, after the notice of penalty has been sent. **A)** 10, **B)** 20, **C)** 30, **D)** 45. *See the correct answer on page 2.*

Safety Tip of the Month!

Summer is near; stay hydrated and avoid extreme heat conditions. Heat related illness ranges from mild to potentially fatal.



Note From The Chief

We are regrouping after our recent layoffs and evaluating all aspects of the Electrical Program to achieve the highest level of efficiency and effectiveness with our limited resources. We are maximizing our inspection response by better grouping the inspectors' daily work. Some inspections may take longer if the job is remote and has no other inspections close by.

Even after the March 31st layoff, we made 93% of all inspections within 2 days after receiving the inspection request and 80% within 1 day after the inspection request was made. Inspectors work hard each day to keep up with the huge demands of their jobs. You can help them by getting your jobs done correctly – without corrections – and planning ahead to make sure we have access to inspect your job so that your request does not turn into an emergency.

We will continue to improve what is one of, if not the best, Electrical Program in the nation. The program's improvements, innovations, and hard work of recent years will continue to pay off with quality service for all our customers – electrical contractors and consumers – and make Washington an even safer place to live and work.

DC Water Pumps and Controllers

Rural installations of small water pumping systems using direct-current pumps and controllers are being installed in Washington. Often, these pumps are powered by solar photovoltaic or wind turbine systems. This type of direct-current pump and controller does not have a U.L. standard and are not listed by any electrical testing laboratory. Because a standard is not available for the direct-current pump and controller listing or field evaluation is not possible, consequently the department will accept the pump and controller as supplied by the manufacturer.

The lack of standards for these direct current pumps/controllers presents an unavoidable Buyer Beware situation. All other components of the installation, charge controller, PV system, wind turbine, etc., must be appropriately listed, field evaluated, or if applicable, labeled by an approved engineer. The electrical inspector will inspect the entire installation as required in RCW 19.28.101.

Good Job Descriptions Equal Quicker And Better Inspections

The electrical inspectors continue to receive inspection requests with very poor descriptions of the work to be inspected and directions to the jobsite address. Help your inspector to quickly find your jobsite and the exact work to be inspected so that you will receive quicker and more accurate inspections. The following are actual job descriptions received on permits: "e*xtend circuit," "structural," "run a circuit," "homeowner request," "circuit to heat pump," "add outlet in master bathroom," "wiring in new barn."* Can you tell the difference? The first three are virtually useless to the inspector. The last three are clear and will enable the inspector to quickly find the work to be inspected.

Like the job description, it is equally important to provide good directions to your jobsite. Here are some examples of bad and good directions: *"near Pinto Ridge Rd and Hwy 28," "Hwy 20," "on right, 1/2 mile south of Hwy 14 on Stonehenge Dr," "NW corner of Hoctor Rd. and W. Loop Dr."* As with job descriptions, it is easy to tell the difference between good and bad instructions. Help yourself by helping the inspector.

Fee Training Series – Single/2-Family Residential Existing Structures And Systems And Multifamily Dwellings

This is the second in a series of articles on selecting the appropriate permit fees for your work. WAC 296-46B-906(1), Residential, is separated into six sections. Paragraphs (b), (c), (d) are the primary sections to use when determining the permit fees for changes to your existing single, 2-family, and new or existing multi-family residential electrical project.

Paragraph (b) covers multi-family residential and miscellaneous residential structures not included in paragraph (a). This includes: new apartment buildings and other residential structures that do not serve a direct accessory function to a single or 2-family residence like: shop, agricultural, hobby, personal aircraft hangers, separate apartments, etc. that do not serve a direct accessory function to the single or 2-family residence.

The fees in paragraph (b) are based upon the service/feeder size. For instance, in a multi-family building that has an 800 ampere service with two 400 ampere feeders supplying eight 100 ampere feeders would have a total permit fee of $479.20 (i.e. the largest 800 ampere service/feeder ($181.20) plus two additional 400 ampere feeders (2 X $50.60 = $101.20) plus eight additional 100 ampere feeders (8 X $24.60 = $196.80) equals a total fee of $479.20). This fee includes all the building's branch circuits and is large enough to allow for no more than twelve ½ hour progress inspections.

For a new miscellaneous residential structure that does not serve a direct accessory function to a single or 2-family structure, you should use the same method to calculate your fees. For instance, for a new single family residence with a new horse barn being supplied by a 100 ampere feeder from the house, use paragraph (a) as described last month to calculate the fee for the house and use paragraph (b) to calculate the fee for the 100 ampere feeder to the barn. The barn feeder will cost $82.70 in addition to the fee for the house.

Paragraph (c) should be used to calculate the fees for single, 2-family, or multi-family altered services or feeders. The fees in paragraph (c)(i) for altered services/feeders are similar to those in paragraph (b) for new installations. For instance, to replace a 200 ampere residential service, the fee is $70.30. To replace an 800 ampere multi-family service with two 400 ampere feeders the fee is $360.60 (i.e. 800 ampere service ($155.00) plus two 400 ampere feeders (2 X $102.80 = $205.60) equals $360.60). This fee includes all the branch circuits supplied directly by the service and the two feeders and is large enough to allow for no more than nine ½ hour progress inspections. The fee in paragraph (c)(ii) should be used when the only repair is to the meter and/or mast and there are no alterations necessary to the service or feeder supplied through that meter and/or mast. This is a flat rate fee of $38.10 regardless of the amperage.

Paragraph (d) should be used for circuit additions in areas where the building and other circuits already exist. The most common usage is when adding outlets to existing circuits or when adding circuits in an existing area or where the circuit already exists (e.g. bonus room with existing circuit available to supply the room). For instance, when adding outlets onto four different circuits supplied from a single panelboard, the fee is $50.60. If the outlets are being added onto five different circuits supplied from a single panelboard, the fee is $56.10 (i.e. first four circuits ($50.60) plus fifth circuit ($5.50) equals $56.10). When adding outlets to onto four different circuits supplied from two panelboards, the fee is $50.60 per panelboard for a total fee of $101.20. When more than four circuits to a panelboard are altered, add $5.50 per circuit as described in the previous example.

If the paragraph (d) fee equals or exceeds the fee for the panelboard containing the altered circuits, you should use the fee in paragraph (c) instead of (d) for those circuits. For instance, you are adding outlets to 20 circuits in a 200 ampere panelboard. Using paragraph (d), the fee would be $138.60 (i.e. 1st four circuits ($50.60) plus 16 circuits ($5.50 X 16 = $88.00) equals $138.60). Using paragraph (c) for a 200 ampere panelboard, including all circuits, the fee is $70.30. Since the fee calculated in (d) - $138.60 – is greater than that calculated in (c) - $70.30) – your final fee should be the lower fee calculated in paragraph (c) of $70.30. Paragraph (d) should not be used when the area being wired is new square footage (e.g. additions, bump outs, attic remodels, bonus room without available circuit, etc.) or there is not existing circuit available for supplying the area. The fees, for additions that add square footage to the original house, should be calculated using the square footage in paragraph (1)(a).

Answer to This Month's Question of the Month:

D) 20 (see RCW 19.28.131)

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Washington State Department of Labor & Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 13 No. 5** **May 2010**

This Month's Question of the Month

In a dwelling with a 120/240-volt, 200 ampere service there are three separately controlled heating units at 1,000 watts each. The calculated heating load using the NEC optional method is _____. **A)** 6,000 volt-amperes, **B)** 4,000 volt-amperes, **C)** 2,400 volt-amperes, **D)** 1,950 volt-amperes. *See the correct answer on page 2.*

Safety Tip of the Month!

GFCI receptacles have been shown to reduce the danger of electrocution, especially in locations where contact with water is likely.

They must be tested to ensure they still work. With a device plugged into the receptacle, press the TEST button. The device should not work. Press the RESET to restore power to the outlet.

Note From The Chief

L&I has been receiving complaints from contractors and inspectors about having to be the primary quality control for contractors and their assigned administrators/master electricians that do not verify the electrical work done by their electricians is up to code and safe before calling for inspection.

RCW 19.28.361 makes the installer – contractor and electrician – personally responsible and liable for any injury or damage to a person or property for any defect in the electrical installation. The RCW goes on to say that the inspector is not responsible for the safety of the installation.

Inspectors do not inspect each termination, piece of wire, wire connector, or other device or equipment. The inspector is not on the job to create a "punch list" of items that need repairing or witness testing required by the NEC or other codes (e.g. fire alarm testing, ground fault testing, etc.). However, the inspector may test the final installation of devices like receptacle polarity, ground fault circuit interrupters, and arc-fault protection devices.

The inspector's job is to quickly do a quick visual inspection to assure that the contractor and assigned administrator/master electrician has done the quality control work for their installations. The inspector is not expected to and will not be able to find every correction in an electrical installation. To find every possible problem in an electrical installation would essentially require the inspector to personally perform the complete installation.

Inspectors and your customers expect to be able to inspect each installation without encountering significant safety problems – no corrections. Of the 117,560 inspections made this year, only 21,173 – 18% – had corrections written. Remarkably, only 20% of all electrical contractors caused 74% of all reinspections. Because the contractor failed to be responsible for the quality of their electricians' work, and corrections were issued which resulted in the need for a reinspection. All contractors, administrators, and electricians should do their part in reducing the number of corrections the inspector encounters. Your reduction of corrections will save everyone time and money.

Outdoor Generator Disconnecting Means

There is some confusion as to the intent of WAC 296-46B-225(2) regarding the requirements for a feeder disconnecting means when an outdoor generator is used to supply a building. The Washington Administrative Code 296-46A was changed in 2001, to clarify that a feeder disconnecting means installed within 15' of a building was to be considered "in/on the building" and not subject to the requirements of NEC 225 for outside feeders. This change moved the feeder disconnection requirement to NEC 215, essentially eliminating the requirements of NEC 225 for outdoor feeders.

2008 NEC 700.12(B)(6), 701.11(B)(5), and 702.11 were changed to require the disconnecting means for an outdoor generator installed within sight of a building that is used as the building disconnecting means to meet the requirements of NEC 225.36 – service rated. Because of the original intent of the WAC rule, a service rating will not be required for these disconnecting means.

The Electrical Program will propose a rule change to again clarify the intent of the WAC – that a feeder disconnecting means, located within 15' of the building, is considered to be on/in the building and subject to the

requirements of NEC 215 – in the next technical WAC change process. At this time, a feeder disconnecting means installed in a readily accessible location on an outdoor generator located within 15' of the building does not have to be service rated. The WAC will be open for proposals in the fall of 2010.

● Fee Training Series – Single/2-Family Residential New Construction

This is the first in a series of articles on selecting the appropriate permit fees for your work. Many permit purchasers use incorrect fee lines for determining the cost of their electrical permit. This series of articles will break down permit purchasing into some of the more common types of permit purchases.

WAC 296-46B-906(1),Residential, is separated into six sections – (a) single/2-family new construction, (b) multi-family new construction, (c) single/multi-family altered services/feeders, (d) single/multi-family circuits only, (e)mobile/modular homes and parks, and (f) mobile home park sites. WAC 296-46B-906(1)(a) is the primary section to use when determining the permit fees for your new residential electrical project.

Single and 2-family new construction fees are primarily based upon the square footage of the unit(s) plus the square footage for an attached garage. You should use the dwelling square footage listed on the building plans approved by the building official for your basic calculation plus the exterior wall square footage for the attached garage. For example, if your house has a total of 1,305 square feet, the fee is $101.30 ($76.70 for the 1st 1,300 square feet plus $24.60 for the additional 5 square feet). An additional $24.60 is required for each 500 square feet or portion of that is over the initial 1,300 square feet.

Section (1)(a) also includes additional fees for outbuildings, swimming pools/spas, and septic systems. These fees are separated into two categories – those inspected *"at the same time"* and those *"inspected separately." "At the same time"* means all wiring is to be ready for inspection during the initial – *first* – inspection. *"Inspected separately"* means the wiring in not ready for inspection during the initial inspection. For example, if the house described above had a septic system inspected after the initial inspection, an additional septic fee of $50.60 would be required, bringing the total fee to $151.90.

Outbuildings are structures that serve a *"direct accessory"* function required to support the residence, such as a pump house or storage building. Outbuilding does not include buildings used for commercial or other purposes (e.g. hobby buildings, workshops, etc.). Using the outbuilding fees in (1)(a) for these structures is incorrect. Fees for buildings and other wiring not serving a direct accessory function to the dwelling or when the dwelling is not built will be covered in later articles.

If a dwelling building permit has not been issued by the building official, Section (1)(a) fees cannot be used for outbuildings, pools/spas, or septic systems. The fees in Section (1)(b) should be used for outbuildings, pools/spas, or septic systems when the dwelling is not on the property. If a dwelling building permit and an electrical permit for the dwelling has been issued, but the dwelling is not ready for inspection, the fees in Section (1)(a) for *"inspected separately"* should be used for outbuildings, pools/spas, or septic systems.

Additional progress inspection, generator, emergency inspections, thermostat and other miscellaneous fees may also apply and would need to be added to the permit. These are found in section (5) Miscellaneous. For example, the described house would have an additional fee of $70.30 (WAC 296-46B-906(5)(g) & 906(1)(c)(i) if a permanent generator 200 amperes or smaller is also installed.

The total fee must not be less than the number of progress inspection units (1/2 hour interval of inspection time or any part of) times the progress inspection fee rate from section (8) - $38.20. For instance, the house described above with the generator may have up to 5 progress inspections without additional progress fees being required - $222.20 / $38.20 = 5.8 progress inspection units. This fee does not support a 6th trip. If a 6th inspection unit is needed, an additional progress inspection unit fee of $38.20 will be required before the inspection is made.

If *"trip"* fees are assessed per WAC 296-46B-906(7), they do not count as a permit fee covering progress inspections. Trip fees are penalty fees that are separate from the regular permit for any type of installation.

● Answer to This Month's Question of the Month:

D) 1,950 volt-amperes (see NEC 220.82)

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ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 13 No. 4** **April 2010**

This Month's Question of the Month

The maximum voltage that is allowed in a dwelling unit is **A)** 120 volts between conductors **B)** 250 volts nominal **C)** 277 volts to ground **D)** 600 system volts. *See the correct answer on page 2.*

Safety Tip of the Month!

Avoid head on motor vehicle collisions by keeping your wheels straight when waiting to make a left turn.

If your wheels are turned left and your vehicle is struck from behind by another vehicle, you may be pushed into oncoming traffic.

Electrical Board Recruitment – General Public Seat

There will be a vacancy on the Electrical Board in July. Dave Jacobson has served in the General Public Seat on the board for ten years. He has been appointed to the Chairmanship of the Pierce County Citizen's Advisory Board and elected as a Pierce County Parks and Recreation Commissioner. Dave's new duties preclude him from reapplying for the Electrical Board at the end of his term. Thanks Dave for all your hard work and dedication to the electrical and telecommunications industry.

Anyone interested in applying for the General Public Seat can get an application form on the Governor's website at: http://www.governor.wa.gov/boards/application/default.asp. Application must be made using the Governor's form. Send your resume and any additional information you would like considered in a separate e-mail to the Boards and Commissions mailbox at GovernorGregoireBoardsandCommissions@gov.wa.gov. Recommendation letters should be sent to the Governor's office. If you have questions about the position or the Electrical Board, contact: Crystal Forsberg at (360) 902-5249.

Continuing Education Instructors Do Not Represent L&I Or Any Other AHJ

The Electrical Program approves hundreds of electrical education courses and instructors each year; however, they do not represent L&I, the Electrical Program, or any Authority Having Jurisdiction (AHJ). The program reviews each course's basic curriculum and process and the minimum credentials for instructors.

Instructors, even those who may be or have been inspectors, only represent the training class sponsor. They do not represent L&I or any other AHJ. As with any class or book, attendees must be aware that for an official interpretation of any code, rule, or policy, they must ask the AHJ directly. Interpretations by class instructors or authors may or may not be correct. If you make an improper installation or violate a permitting, licensing, or certification law, you will be accountable, even if you believe your instructor provided you with a correct interpretation.

Many instructors have a disclaimer in their presentation – that they do not represent any AHJ. However, some do not clearly say that they only represent themselves and the course provider. If you have any doubt about what the official interpretation will be, ask questions of the AHJ.

Equipment Approval Options For Industrial Equipment

Electrical contractors are still confused regarding the allowed types of approval for equipment. There are two basic categories of equipment:

- Industrial control panels and industrial utilization equipment as defined in WAC 296-46B-903(5) – This equipment may be listed or field evaluated by an approved electrical testing laboratory or reviewed/approved by an approved electrical engineer.
- All other equipment – This equipment may be listed or field evaluated by an approved electrical testing laboratory
- Normal L&I inspection – If the electrical system of the equipment is comprised of listed components installed in conformance with the NEC and WAC. Additional fees may be required for inspection time.

If a field evaluation or engineer review is used to gain equipment acceptance, the laboratory or engineer must request approval from L&I's Chief Electrical Inspector before the review is begun. Equipment not accepted by the Authority Having Jurisdiction (AHJ) should not be operated without AHJ approval.

Generator Fees

L&I has found contractors and owners attempting to use the incorrect fee schedules when buying permits. The fee schedule for generators is found in WAC 296-46B-906(5)(g). Remember that, for electrical permit fees, wind turbine, photovoltaic systems, and fuel cell systems are also considered to be generators. Remember that the initial permit fee must cover all trips. A trip is equal to one inspection or 30 minutes of inspection time per inspection, whichever is less. The permit fee must be at least $76.40 to qualify for two trips.

The fee for a portable generator is currently $70.30. For permanently installed generators you must use the appropriate residential or commercial new/altered service or feeder section, not the section for new residential construction.

Do not assume that the fee for a generator is included in the square foot permit cost for a new residence. Generators are a separate fee line item. For residential generators, use WAC 296-46B-906(1)(b) for new generators or 906(1)(c) for altered generator feeders.

- For a new generator, 200 amperes or less, with no other work, the fee is currently $82.70. If another feeder or service is involved, the initial fee is $24.60 (WAC 296-46B-906(1)(b)).
- For an existing generator system work (e.g. replacement of generator, transfer switch, generator system wiring, etc.), 200 amperes or less, the initial fee is currently $70.30 (WAC 296-46B-906(1)(c)).

For commercial generators, use WAC 296-46B-906(2)(a) for new generators or 906(2)(b) for altered generator feeders.

Passive Testing Is OK Without A Contractor's License

Passive testing of electrical systems does not require electrical contractor licensing, electrician certification, or permitting and inspection. Passive, means that the tester does not interfere, in any way, with the electrical system (e.g. does not: un-terminate/terminate any wiring, device, or other equipment). The tester may use electrical instruments to perform tests of the electrical system or change adjustable setting of timers, relays, or other adjustments that can be made without un-terminating/terminating. An example of passive testing is when a fire alarm system is given an operational test by an owner, owner's representative, or fire official.

Note From The Chief

As you know, the Electrical Program experienced a second round of layoffs March 31st. Because of the continuing sluggish construction economy, we were forced to lose thirteen valuable members of our inspection staff. Permit revenue has fallen by 24% since 2007. Since last year, we have had to lay off 59 inspectors and support staff – about one-third of our total workforce. Because of the most recent layoff, contractors may need to build in longer inspection wait times into their construction schedules.

Because of the layoffs, the number of inspections each inspector must complete has risen. There will be times when the inspector will be able to complete the inspection in the 24-hour timeframe, such as when a site is geographically close to another needing an inspection, or in emergency situations; but our goal is centered on a 48-hour inspection response. We know how time-sensitive building schedules are, so we are hoping builders will plan for longer wait times.

Yet, through this transition, much will remain unchanged – we must stay relentlessly focused on delivering excellent electrical inspections and upon having a strong compliance presence. We will continue to maintain rapid responses to inspection requests and vigilance with the underground economy and contractors who attempt to operate with inappropriate competitive advantages (not buying permits, working unsupervised trainees, etc.). While we focus on our mission, we will also be looking for innovative ways to be even more efficient and effective than we have been in the past. This will not be easy; but, I am confident that we can find great opportunity for the Electrical Program in the challenges ahead. I hope all of you are as well. Our mission has been "We Keep Washington Safe." That will not change.

Answer to This Month's Question of the Month:

D) 600 system volts (see NEC 690.7(C))

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ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 13 No. 3** **March 2010**

This Month's Question of the Month

A panelboard containing the interconnected electric power production source (IEEPS) interconnection point has a 60 ampere main breaker. A 60 ampere IEPPS source breaker is located next to the main breaker. The minimum rating of the panelboard is **A)** 60 amperes **B)** 70 amperes **C)** 100 amperes **D)** 120 amperes. *See the correct answer on page 2.*

2010 Legislative Activity

Two bills were proposed this legislative session that directly impact the Electrical Program.

HB 2555 passed both the House and Senate and allows the Electrical Program to issue subpoenas when requested information is not provided. HB 2555 will provide another tool to help us combat the underground economy and level the competitive playing field for legitimate electrical contractors.

HB 2546 passed both the House and Senate and raises the requirements for trainees' classroom training to 48 hour per renewal period. This requirement is to be phased in. To renew on or after July 1, 2011, trainees must have 32 hours of classroom training. To renew on or after July 1, 2013, they must have 48 hours. This bill will improve the trainees' educational process and knowledge – they will be better electricians.

Safety Tip of the Month!

Protect you, your family, and your investment – Make certain you hire a legitimate electrical contractor who:

- Uses certified electricians; and
- Gets the work inspected.

Check your contractor's and electrician's status at: https://fortress.wa.gov/lni/bbip/Search.aspx

Time Sensitive and Critical Inspections

In some situations, the timing of the electrical inspection is critical to the customer's needs. Because of our limited inspection staff, we need your help in coordinating the inspection timelines. Let the inspector or supervisor know in advance when you have a critical need. As with your project, we must plan ahead. Do not commit to your customer that the inspector will arrive at a specific time without first coordinating with the inspector or the inspector's supervisor. Without prior coordination, we may have a prior commitment that will make us unavailable to do your inspection when you need it done.

We are committed to working with you to make the inspection process as timely as possible. It is to everyone's advantage to communicate needs and availability. You, your customers, and the inspectors want the inspection process to go as smoothly as possible. We will do our best to be available for your critical inspection needs.

HVAC Marking Requirements

We continue to have to write many corrections because the HVAC installing electrician fails to do the field marking required on furnaces with electric strip heating modules.

NEC 424.28(A) says, "***Marking Required**. Each unit of fixed electric space-heating equipment shall be provided with a nameplate giving the identifying name and the normal rating in volts and watts or in volts and amperes*" and "*Electric space-heating equipment intended for use on alternating current only or direct current only shall be marked to so indicate. The marking of equipment consisting of motors over 1/8 hp and other loads shall specify the rating of the motor in volts, amperes, and frequency, and the heating load in volts and watts or in volts and amperes.*" Part (B) of the article requires the label to be located so it is visible or easily accessible after the installation is complete.

You can avoid the expense and time required for reinspections by identifying the heating modules installed on the label provided by the furnace manufacturer. This marking is the responsibility of the HVAC installing electrician. It is critical for both the electrician providing the circuit wiring and overcurrent protection and the inspector making the inspection to have this information before they can begin their work.

Fighting the Underground Economy

Operating outside the requirements for licensing, certification, and permitting is very tempting to some individuals and contractors working in today's economy. The underground economy and companies attempting to operate with an unfair competitive advantage take work away from legitimate contractors and individual electricians who take pride in their work and the electrical industry.

L&I is actively doing everything possible to reduce these impacts. As a result our electrical inspectors' efforts, assisted by the E-CORE team, we have had another successful year working proactively with the industry and combating companies and individuals not playing by the rules. For the 2009, calendar year the electrical program issued 9,114 electrical violations. 70% or about 6,400 were issued for unlicensed contracting, uncertified electricians, doing work with no permit, or a related issue. All these violations are considered to be a part of the underground economy.

No matter what you do, inspector, contractor, electrician, regulator, or citizen, we encourage you to do your part in reducing the negative effects of the people who choose to violate the electrical laws and compete unfairly and in many cases unsafely with the legitimate electrical industry. We welcome your referrals about this type of unfair and illegal activity. If you know or suspect this type of violation, we encourage you to notify your local L&I electrical inspection office or a member of our compliance investigative team. Contact numbers for our offices can be found at http://www.lni.wa.gov/Main/ContactInfo/OfficeLocations/default.asp or you can call the investigative team at (360) 902-5249.

Please do your part by helping provide a level competitive environment for legitimate contractors so they can provide safe electrical installations for their customers.

Testing Laboratories and Engineer Evaluators

We have recently approved a new testing laboratory, Communication Certification Laboratory (CCL), and engineer evaluator, Picatti Brothers, Inc. Their contact information along with the other approved laboratories and engineers can be found at:

http://www.lni.wa.gov/TradesLicensing/Electrical/Install/default.asp

Plan ahead and if you have equipment that is not properly labeled, make contact with one of our approved laboratories or engineers to get the correct evaluation and approval before requesting an inspection, resulting in an electrical correction. Don't hold up your job's progress.

Inspector Safety

The permit holder must make the electrical inspector aware of any potential physical or health hazards prior to the inspection being performed. Inspectors are faced with many potential hazards (e.g. loose dogs, hazardous chemicals, structural damage, open floor holes, etc.) when making inspections.

The permit holder must have all hazard(s) clearly marked or make the inspector or supervisor aware of the hazard. It is your responsibility to make the inspector aware of all potential hazards prior to the inspection. Mark the outside of the jobsite, make a comment about the hazard on the on-line inspection request form, or otherwise directly notify the inspector of the hazard.

Last Month's Question of the Month: How much money can you save by renewing your journeyman or specialty electrician certificate using the online web process? $6.80

Answer to This Month's Question of the Month:

D) 120 amperes, see NEC 705.12(D)(7).

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ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 13 No. 02** **February 2010**

New Electrical Examination Information

Beginning on March 1, 2010:

- All electrical examinations will be based on the 2008 National Electrical Code, WAC 296-46B, and 19.28 RCW. This applies for all examination candidates even if they started the examination process before March 1, 2010.
- The examination will be offered at the following Washington PSI testing sites: Spokane, Pasco, Yakima, East Wenatchee, Burlington, Everett, Seattle, Tacoma, Olympia and Vancouver. The examination is also available nationwide at over 200 PSI testing sites.

Safety Tip of the Month!

Tough economic times are pressuring everyone to do more with less

Everyone deserves to have their loved ones home safely at the end of the day.

Never compromise safety for any reason.

Make safety your priority!

Electrical examinations occurring before March 1, 2010, must be scheduled by contacting PSI at: 1-800-211-2754.

If you are planning on taking an electrical examination on or after March 1, 2010, you may schedule for an examination with PSI using one of the following methods:

- Via the Internet 24 hours a day at www.psiexams.com
- Using a touch-tone phone, call PSI 24 hours a day at (800) 733-9267
- With a PSI registrar at (800) 733-9267, available Monday through Friday, between 4:30 am and 5:00 pm and Saturday, between 8:00 am and 2:00 pm, Pacific Time.

In order to ensure that the appropriate person is taking the examination, each time you take an electrical exam from L&I's examination contractor, PSI, you will need to **provide two forms of identification** before being allowed to test.

One must be a VALID form of government issued identification (e.g. driver's license, state ID, passport, etc.). The second must have your signature and preprinted legal name (e.g. employee ID, credit/debit card, etc.). Identification must match the name on the registration form.

Do not schedule for an examination unless you have the required identification or have made special arrangements three weeks prior to your exam date with PSI.

Electrical Program Staff Reductions

The nationwide downturn in construction continues to adversely affect the electrical industry in Washington State. Electrical permit sales remain sluggish. As a result, reductions in staffing are again necessary to assure that the electrical program expenditures do not deplete the dedicated electrical fund. Just like our stake holders, the electrical program has to live within their means.

- Staff reductions amounting to 35 electrical inspectors and 5 regional customer service specialists occurred at this time last year.
- This year's reductions include 1 field supervisor, 6 lead inspectors, 6 inspectors and 6 licensing and technical staff – 19 additional positions. The staff cuts will be effective March 31, 2010.

The electrical program continues to seek out and implement every process improvement possible to help us continue to provide high quality service. Just like our stakeholders, our remaining inspectors will have more area to cover after March 31st. You will likely see some changes in our inspection practices and in some instances our ability to quickly respond to inspection requests.

Please help us to serve you better by making certain you have:

- Entered the correct address and posted it plainly at the jobsite.
- Entered complete directions on the permit application so we can easily find the jobsite.
- Provided a detailed description of the work that was done
- Given us any information we might need to gain access on every trip to do your inspection.
- Talked directly with your inspector in advance of needing an urgent or scheduled inspection.
- Committed to inspection timelines with your customer that we are aware of and able to meet.

Where Are Tamper Resistant Outlets Required In Dwelling Units?

NEC 406.11 requires that all required dwelling unit receptacle outlets required by NEC 210.52 must be tamper resistant. However, there are exceptions – Receptacle outlets that are part of a luminaire or appliance, or controlled by a wall switch in accordance with 210.70(A)(1), Exception No. 1, or located within cabinets or cupboards, or located more that 1.7m (5 1/2 ft) above the floor installed in addition to those required by NEC 210.52 are not required to be tamper resistant.

Permitted Uses Expanded For Multiconductor Type TC Cable

The permitted uses for tray cable are found in NEC 336.10. In addition to those permitted uses, Type TC multiconductor cable will be permitted to be used in all building classifications where Type NM cable is allowed by WAC 296-46B-334. Type TC cable is arguably more durable than Type NMB. The jacket on a NM cable usually is 20 mils thick with a 10 mil paper covering under it. The protective jacket of Type TC cable must be at least 45 mils thick.

When Type TC cable is used in NEC 334 applications, it must be installed in strict conformance with Part II of NEC Article 334 and the bending radius requirements of NEC 336.26 or adhere strictly to the requirements of NEC Article 336.

Concrete Encased Electrodes - Materials, Installation And Inspection

Concrete encased electrodes are defined in NEC 250.52(A)(3) as an acceptable electrode permitted for grounding. The electrode must be encased by at least 2 inches of concrete, located within and near the bottom of a concrete foundation or footing that is in direct contact with the earth. In addition the electrode must be made of at least 20 feet of one or more bare or zinc galvanized or other electrically conductive steel reinforcing bars or rods of not less than ½ inch in diameter or consisting of at least 20 feet of bare copper conductor not smaller than 4 AWG. Numerous studies have shown that a properly installed concrete encased electrode system will maintain a resistance of four ohms or less to ground for the life of the foundation.

In order to ensure that the concrete encased electrode functions properly, reinforcing bars or rods encapsulated with non-conductive coating such as epoxy cannot be used. The required 20 feet of reinforcing bar or rod may be made of multiple pieces joined together by tie wire to satisfy the length requirement. The concrete encased electrode is not required to be connected to the rest of the rebar in the footings and walls; but that connection is recommended so that the electrode is as large as possible. In addition, vapor barriers or insulating material are not allowed between the concrete footing/foundation and the earth.

Three inspection possibilities for concrete encased electrodes exist in *WAC 296-46B-250*(2):

1) At the time of inspection of other work on the project, providing the concrete-encased electrode is accessible for visual inspection.
2) At the time of the service inspection providing the installer has provided a method so the inspector can verify the continuity of the electrode conductor along its entire length. This can be accomplished by attaching a length of copper wire to one end of the electrode that reaches the location of the grounding electrode conductor that will enable the inspector to measure the resistance of the required 20 feet of rebar with a standard resistance tester.
3) Other methods when prior approval, on a jobsite basis, is given by the inspector.

Electrical Question of the Month

This Month's Question: How much money can you save by renewing your journeyman or specialty electrician certificate using the online web process? **A)** $2.57, **B)** $4.26, **C)** $6.80, **D)** $5.00.

Hint: *WAC 296-46B-909*

Save money by renewing online at: *http://lni.wa.gov/TradesLicensing/LicensingReq/Legal.asp*

Last Month's Question: The output of a utility interactive inverter in an interconnected electric power production system may be connected to _____ of the service disconnecting means. A) the line side, B) the load side, C) only the load side, D) the line or load side The answer is: **D)** See NEC 705.12.

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Washington State Department of Labor & Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 13 No. 01** **January 2010**

Legislative Proposals for the 2010 Legislative Session

The legislature began hearing legislative proposals January 11th. There are several bills being considered that might affect the Electrical Program. If you are interested in these or other proposed legislation, you can find bill information at the legislative website: *http://apps.leg.wa.gov/billinfo/*

- HB 1008 Wind turbine requirements
- HB 2546 Increasing requirement for trainee education
- HB 2555 Granting Electrical Program subpoena power
- SB 5021 Exempt renewable power sources from chapter RCW 19.28 (Electrical oversight)

This legislation is not sponsored or promoted by L&I. It has been submitted for consideration by individuals and associations interested in changing the law to promote their causes.

Safety Tip of the Month!

Practice safe work methods. Never assume a circuit is off. Always turn the circuit off and verify that it is not energized before working on or inspecting an electrical system.

De-energized circuits never shock or kill!

Identification Requirements for Electrical Examination Candidates

In order to ensure that the appropriate person is taking the examination, all candidates taking an electrician or administrator exam from L&I's examination contractor, PSI, will need to provide two forms of identification before being allowed to test.

This applies each time you test. One must be a VALID form of government issued identification (e.g. driver's license, state ID, passport, etc.). The second must have your signature and preprinted legal name (e.g. employee ID, credit/debit card, etc.). Identification must match the name on the registration form.

If you are unable to provide this identification, you must contact PSI at least three weeks prior to attempting your examination in order to make special arrangements.

Do not schedule for an examination unless you have the required identification or have made special arrangements with PSI.

Maintaining Fire Alarm Systems Requires Appropriate Electrical Licensing and Certification

WAC 212-12-035(2) in the Fire Marshall's rules requires that, *"In all Group E-3, I, LC Occupancies, annual certification of fire alarm systems shall be performed by the holder of a current low-voltage electrical contractors specialty license issued by the Department of Labor and Industries."*

Labor and Industries regulates the licensing of electrical contractors and the certification of workers who perform electrical work. Fire alarm testing or maintenance work that involves disconnecting and reconnecting electrical connections or replacing components must be performed by a properly licensed electrical contractor employing properly certified electricians or properly supervised trainees in strict conformance with all requirements of chapter 19.28 RCW and chapter 296-46B WAC.

Continuing Education and Trainee Classes are not Completed Until the Roster is Submitted

When taking an electrical training class, you should make certain that the class provider promptly submits the roster for your class. The provider has seven calendar days in which to submit the electronic roster to L&I. You have not completed the class until the roster is submitted to L&I. You can verify that your course provider has properly applied your course credit by reviewing your education information at:

https://fortress.wa.gov/lni/bbip/Search.aspx

Completed courses are no longer displayed on our external website if they have been applied to satisfy previous renewal requirements. Contact the course provider if you are missing credit for a completed course. Completion certificates will not be accepted as evidence that your education requirements have been fulfilled.

If you do not complete the class or the roster is not submitted in a timely manner, you may be late in completing your education requirements.

Do not wait until the last minute to take your class.

● Licensing and Certification Requirements for Mixed Occupancy Buildings of Three Floors or Less

It is becoming more common for owners and builders to construct buildings with mixed use occupancies.

For example, you may see a three story building with the street level as retail commercial and the top two floors being residential occupancy. In this example, an (02) Residential specialty can work in the residential occupancy area because the building is no higher than 3 stories above grade. For practical purposes, the commercial or residential floors could be at any of the three levels.

The residential specialty is restricted to working only inside the residential occupancy area(s) of the building. Occupancy areas are set by the building official. To confirm the occupancy rating, you must look at the approved building plans or contact the building official.

As an installer or inspector, you must remain aware that the residential specialty is limited to very specific wiring methods. Review WAC 296-46B-920(2)(a) for specific restrictions.

Any part of the residential occupancy's electrical system located outside the residential occupancy area(s) (i.e. in the commercial occupancy area, etc.) must be installed by a (01) general or appropriate specialty contractor/electrician. Any part of the commercial occupancy's electrical system located within the residential occupancy must be installed by a (01) general or appropriate specialty contractor/electrician.

This restriction may require the (01) contractor/electrician to install feeders and/or branch circuits from/through the commercial occupancy area to the residential areas.

In the example to the right, the (01) must install the feeders from the building service in the retail space to the two residential sub-panels. The (02) may install the residential sub-panels and the wiring from them so long as it remains inside the residential areas. If residential wiring passes through the retail space, the wiring must be installed by the (01). All

● Sizing and Disconnect Requirements for NEC 702 Optional Standby Systems

Installers should be aware that NEC 702.5(B) requires that the load connected to a supply source be calculated in accordance with NEC 220. Optional sources of power connected through an automatic transfer switch must be sized to supply the full calculated load. For instance, if the calculation showed a load of 2.5 kw, the optional source of power (e.g. generator, etc.) must be sized at least 2.5 kw.

Another installation problem routinely encountered by inspectors is the failure of the installer to use a properly rated disconnecting means for outdoor generator sets. NEC 702.11 requires that the disconnecting means must meet the requirements of NEC 225.36. NEC 225.36 requires that the disconnecting means be suitable for use as service equipment, except that in garages and outbuildings on residential property, a snap switch or a set of 3-way or 4-way snap switches are permitted as the disconnecting means.

● Electrical Question of the Month

This Month's Question: The output of a utility interactive inverter in an interconnected electric power production system may be connected to _____ of the service disconnecting means. **A)** the line side, **B)** the load side, **C)** only the load side, **D)** the line or load side

Last Month's Question: Last Month's Question: What is the ampacity of a #2 AWG aluminum Type SE cable used as an apartment unit main feeder installed indoors in an 80 °F environment? **A)** 75 amps, **B)** 95 amps, **C)** 100 amps, **D)** 90 amps. The answer is: **C)** 100 amps as allowed by NEC 310.15(B)(6)

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Washington State Department of Labor & Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 12 No. 12** **December 2009**

Implementation Date And Locations For New Electrical Examinations

Safety Tip of the Month!

Daylight is very limited this time of the year. Always wear your reflective clothing so that others can see you. Wearing reflective clothing everyday reduces the possibility of injury from a motor vehicle or other mobile equipment.

Beginning on March 1, 2010:

- All electrical examinations will be based on the 2008 National Electrical Code, WAC 296-46B, and 19.28 RCW. This applies for all examination candidates even if they started the examination process before March 1, 2010.
- The examination will be offered at the following Washington PSI testing sites: Spokane, Pasco, Yakima, East Wenatchee, Burlington, Everett, Seattle, Tacoma, Olympia and Vancouver. The examination is also available nationwide at over 200 PSI testing sites.

Electrical examinations occurring before March 1, 2010, must be scheduled by contacting PSI at: 1-800-211-2754.

If you are planning on taking an electrical examination on or after March 1, 2010, you may schedule for an examination with PSI after mid February, using one of the following methods:

- Via the Internet 24 hours a day at www.psiexams.com
- Using a touch-tone phone, call PSI 24 hours a day at (800) 733-9267
- With a PSI registrar at (800) 733-9267, available Monday through Friday, between 4:30 am and 5:00 pm and Saturday, between 8:00 am and 2:00 pm, Pacific Time.

The next edition of the Electrical Currents will contain more information on the examination process.

Circuit Extensions Connected By Extension Cords Are Not Allowed

A variety of products are now on the market in response to the demand for providing concealed power to wall mounted flat screen televisions and similar devices. Most of these products consist of a kit that contains a cut-in outlet box for behind the television, a cut-in outlet box for below the television, a length of Type NM used to connect the two boxes and a standard duplex receptacle for behind the TV. Also included in the kit is a male receptacle for the lower cut in box and an extension cord used to connect the male receptacle to a nearby existing outlet. This picture is an example of one manufacturer's system.

NEC 408.4 (1) says that flexible cords and cables must not be used as a substitute for the fixed wiring of a structure. The requirements of the National Electrical Code take precedence over any overall product listing information provided with this type of circuit extension kit.

Access to Wiring Box Behind Surface Mounted Luminaires

Generally, a surface mounted luminaire, such as a fluorescent strip, must have a hole providing access to the wiring in the luminaire's outlet box. The only exception is when the luminaire is designed to be solely supported by the box. The National Electrical Code is very clear about this requirement.

NEC 410.24(B) states, *"Electric-discharge luminaires surface mounted over concealed outlet, pull, or junction boxes and designed not to be supported solely by the outlet box shall be provided with suitable openings in the back of the luminaire to provide access to the wiring in the box."*

Scope-Of-Work Crossover, Proper Supervision And Reporting Training Hours Legally

A specialty electrical contractor's scope of work determines the type of specialty electrician they can employ and dispatch without supervision. If a specialty electrician's certification type is not the same as the contractor's license type, then the individual must have a training certificate and be working under proper supervision. There are three exceptions: **a)** a journeyman (01) electrician can work (as a specialty electrician) for any type of specialty contractor or, **b)** a residential (02) specialty electrician can work for a (07B) residential maintenance contractor and do work within the contractor's scope without supervision or, **c)** an electrician in a specialty that has a "sub-specialty" detailed in WAC 269-46B, Table 920-1 may work for a sub-specialty contractor within the scope of the more limited sub-specialty.

The following is an updated guide, originally printed in the January 2002 and May 2004 editions of this newsletter, to help contractors, electricians, and trainees provide proper personnel and supervision on their jobsites, report training hours in the appropriate categories, and avoid citations for working illegally.

TYPE OF WORK PERFORMED (see scopes in WAC 296-46B-920)	Contractor must be:	Category of Hours Reported	Trainee must be supervised by:
(01) General Electrical:		New Commercial/Industrial (01)	01
(Including All Types Of Specialty Electrical Work)	01	Report hours in the specific specialty type(s) of work performed.	01 or Appropriate Specialty
(02) Residential Construction	02	Residential (02)	01, 02
(03) Pump and Irrigation	03	Pump and Irrigation (03)	01, 03
(03A) Domestic Well	03 or 03A	Domestic Well (03A)	01, 03, 03A
(04) Sign and Outline Lighting	04	Sign (04)	01, 04
(06) Limited Energy Systems	06	Limited Energy Systems (06)	01, 06
(06A) HVAC/R	06A	HVAC/R (06A)	01, 06A
(06B) HVAC/R-restricted	06A or 06B	HVAC/R-restricted (06B)	01, 06A, 06B
(07) Non-Residential Maintenance	07	Non-Residential Maintenance (07)	01, 07
(07C) Restricted Non-Resid. Maint.	07 or 07C	Restricted Non-Resid. Maintenance (07C)	01, 07, 07C
(07B) Residential Maintenance	02, 07, 07C, or 07B	Residential Maintenance (07B)	01, 02, 07, 07C, 07B
(07A) Non-Resid. Lighting Maint.	07, 07C, or 07A	Non-Resid. Lighting Maintenance (07A)	01, 07, 07C, 07A
(07D) Appliance Repair	07, 07E, or 07D	Appliance Repair (07D)	01, 07, 07E, 07D
(07E) Equipment Repair	07 or 07E	Equipment Repair (07E)	01, 07, 07E
(09) Telecommunications	09	None—WAC 296-46B-945(13)(c)	N/A
(10) Door, Gate, and Similar Systems	10	Door, Gate, and Similar Systems (10)	01, 10

Electrical Question of the Month

This Month's Question: What is the ampacity of a #2 AWG aluminum Type SE cable used as an apartment unit main feeder installed indoors in an 80 °F environment? **A)** 75 amps, **B)** 95 amps, **C)** 100 amps, **D)** 90 amps.

Last Month's Question: What is the ampacity of a #6 AWG Copper Type SE cable installed indoors in an 86 °F environment? **A)** 40 amps, **B)** 50 amps, **C)** 65 amps, **D)** 55 amps.

The answer is: **D)** 55 Amps. NEC 338.10(B)(4)(a) refers to the requirements of Article 334, Part II (including the temperature limitations in NEC 334.80). Table 310.16 was used to determine conductor ampacity and correction factors.

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Washington State Department of Labor & Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 12 No. 11** **November 2009**

New Law Requires Electricians And Trainees To Carry Photo Identification

Governor Gregoire signed *SHB 1055* into law in April, 2009. This new law became effective July 26th and amends the identification requirements for electricians and trainees in chapter 19.28 RCW. After July 26, 2009, all electricians and electrical trainees must be in possession of their electrical certificate and a government-issued photo identification at all times when working as an electrician or trainee.

Safety Tip of the Month!

Standing water, ice or snow may conceal hidden hazards.

Help avoid slips, trips and falls by wearing proper footwear and proceeding with caution at all times. Trust your instincts and training, if it is unsafe, find a safe route to get there or don't go!

You must present your electrician or training certification and other means of identification when asked by an L&I or city/county inspector or the owner or owner's representative of the electrical system where the work is being performed. All inspectors and electrical system owners are authorized to request identification of anyone doing electrical work. If you do not comply with the request for identification you are subject to civil penalties.

Printed copies of the current version of *Chapter 19.28 RCW* effective July 26, 2009 will soon be available from your local L&I service location.

New Exams For Electricians And Administrators Are Coming Soon

Early in 2010, electrical examinations will be based upon the 2008 National Electrical Code, WAC 296-46B, and 19.28 RCW. After the implementation date, all applicants will take the updated examinations. This applies for all candidates, even if they started the examination process before the implementation date.

Questions on the updated examinations are based on the fundamentals of the National Electric Code and the electrical laws and rules of Washington. All of the questions reflect current code terminology and definitions. The examination content is unchanged. You can find the examination content at:

http://www.lni.wa.gov/TradesLicensing/Electrical/LicenseExamEd/ExamInfo/default.asp

The PSI exam delivery platform now has enhanced security features that will help insure the integrity of the examination process. Duplication of exams will be eliminated by randomly generating the questions for each exam. A photographic record of each exam candidate will be maintained in the PSI database for future identity verification.

The effective date for the new electrical examinations and locations of the PSI testing facilities will be announced in the next edition of the *Electrical Currents*.

Be the first to know of actions and opportunities relevant to the electrical trade:.
Join the LNI-Electrical electronic mailing list at: *http://lni.wa.gov/Main/Listservs/Electrical.asp* .

Bedroom Circuits In Dwellings Require Arc-Fault Circuit Protection

Everyone should be familiar with the NEC requirement for all 120 volt, 15 and 20 amp outlets in a dwelling to be protected with arc-fault circuit interrupters (AFCI). WAC 296-46B-210(4) amends the broader AFCI requirements of the 2008 NEC by only requiring AFCI protection for outlets in dwelling unit bedroom spaces.

Do not confuse an outlet with a receptacle. While a receptacle is an outlet, an outlet isn't necessarily a receptacle. The NEC defines an outlet as "a point on the electrical circuit at which current is taken to supply utilization equipment." Examples of bedroom outlets could include 120 volt, 15 and 20 amp receptacles, light fixtures, fans, motorized blinds, exhaust fans, heating and cooling equipment, etc.

AFCI protection is not required for smoke or fire alarm outlets. AFCI protection is also not required for replacement outlets or for existing extended circuits if the original circuit was installed before December 1, 2005.

Look Up A Contractor, Electrician, Plumber or Elevator Professionals

Look Up a Contractor, Electrician, Plumber Or Elevator Professional offers new a feature. A "hover over" function has been added to provide a more complete description of the status shown. Here is the list of the status descriptions that will appear when you hover over the "status":

Active –Meets current requirements.

Expired – Licensee has failed to renew.

Suspended – Business or person that has been suspended by the department due to not meeting current licensing requirements.

Inactive for Lack of CEU's – Individual has paid renewal fee but has not met continuing education requirements to satisfy renewal.

Relicensed –Contractor has relicensed under another name, structure, or specialty.

Out of Business – Company that has changed status of license to Out of Business. **(**This status may also be used for businesses or people who have other active licenses in place of this record).

Superseded – Individual license has been replaced with a new higher level license.

Temporary – Individual has been granted an active license on a temporary basis.

Retest –Person who is currently expired, and is in process of retesting to re-establish certification.

Inactive – Indicates name change of an individual or business

2008 NEC Change Affects The Use Of Service Entrance Cable Type SE And USE In Interior Installations

The 2007 Committee Report on Proposals shows that Code Making Panel 7 intended to limit the final ampacity of types SE and USE cables, for most interior installations, to that of 60 °C rated conductors.

As a result, the words *"excluding 334.80"* were removed from the text of Article 338.10(B)(4)(a) in the 2008 NEC. This made all the requirements in Article 334, Part II (including the temperature limitations in NEC 334.80) apply to type SE and USE cables installed inside a building.

However, when these cables are used as the main power feeder to a dwelling unit NEC 310.15(B)(6) applies. For a main power feeder, you should use the ampacity allowed in Table 310.15(B)(6). The main power feeder is defined as service-entrance, service-lateral, or feeder conductors serving as the main power feeder to each dwelling unit when those conductors are installed in a raceway or cable. These cables will carry the full load of the dwelling unit. When used as a main power feeder, the NEC allows cables to be used at a higher ampacity because of the diversity normally found in dwelling units.

Table 310.15(B)(6) cannot be used for ampacity ratings for other feeders or branch circuits. When the table ratings of 310.15(B)(6) are used, you should not impose the temperature limitations of 334.80 on type SE or USE cables that carry the full load of a dwelling unit.

Minimum Circuit Ampacity

Minimum circuit ampacity is the ampacity of a conductor after all correction factors have been applied. The NEC typically allows the use of the next highest rated overcurrent device if the ampacity of the conductor falls between standard ratings. The rating of circuit's overcurrent device does not determine the minimum ampacity of a circuit unless it is less than the ampacity of the conductor.

Always ensure that the ampacity of the equipment supply conductors are equal to or higher than the minimum circuit ampacity shown on the equipment nameplate.

Electrical Question of the Month

What is the ampacity of a #6 AWG Copper Type SE cable installed indoors in an 86 °F environment? A) 40 amps, **B)** 50 amps, **C)** 65 amps, **D)** 55 amps.

October's Question: In a dwelling unit, what combination of dedicated circuits would be allowed to supply receptacles that supply three 120 volt ½ horsepower garage door openers? **A)** One 15 amp and one 20 amp circuit, **B)** Three 15 amp circuits, **C)** One 20 amp circuit, **D)** Just add them the same circuit as the other garage outlets.

The correct answer is: **B)** Three 15 amp circuits

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 12 No. 10** **October 2009**

Revised WAC-296-46B Effective October 31, 2009

Public hearings on the WAC proposals were held in Tumwater during the last week of August. The majority of the comments were supportive in nature. Important changes include:

- Permit and licensing fees increase 5.20%
- Reciprocal and temporary electrician language has been removed
- Amends continuing education requirements

Printed copies of the revised WAC rules are at the printer will be available for purchase shortly at a service location near you. The final revised rules are also available electronically at:

http://lni.wa.gov/TradesLicensing/Electrical/LawRulePol/LawsRules/default.asp

Safety Tip of the Month!

Focus your mind on driving when behind the wheel. There is nothing more important!

Remember to increase your following distance in poor weather. This simple adjustment helps you maneuver and stop safely when you need to.

First Aid Classes Reduced To Four Hours of CEU Credit

The Washington State Electrical Board recently recommended that continuing education credit for first aid courses be limited to a maximum of four hours.

Providers of first aid continuing education courses for Washington electricians and administrators will be required to submit their courses to the department for approval. First aid training materials must be part of the curriculum of a nationally recognized first aid training organization. First aid course instructors are not required to be approved by the department.

Course completion certificates or first aid cards will not be accepted for proof of course completion for those completed after October 30th. Any course taken after October 30th must be pre-approved in order for you to receive credit. Course providers will be required to use the electronic Trades Education Roster Recording System (TERRS) to enter continuing education credit for their students.

A list of approved continuing education courses and the forms for submitting a course are found at:

http://lni.wa.gov/TradesLicensing/Electrical/LicenseExamEd/Education/ContinueEd/default.asp

Continuing Education Reciprocal Agreements End November 30, 2009

At their April 30th meeting, the Electrical Board weighed the pros and cons of continuing education reciprocity and made a unanimous decision to abolish continuing education reciprocity with all states. Credit will be given for all eligible reciprocal continuing education classes completed prior to November 30, 2009. After this date, credit will only be allowed for Washington approved courses. Some of the reasons the board felt this decision is now appropriate include:

- Over the past fifteen years, electrician continuing education delivery and content has changed dramatically. The advent of correspondence and internet delivered continuing education classes has reduced the need for reciprocity and required that specific review criteria be set in place for these types of classes. Several states, including Washington, have already placed specific individual and specific limitations on the delivery of these types of classes.
- Because of severe budget reductions and staff layoffs, Washington is implementing every process improvement possible to save staffing time and resources. Washington continuing education providers have been required, for several years, to electronically enter class rosters directly into Washington's electrician certification database. This process completely automates our certification renewal process for electricians.

The Board will allow classes (and instructors) to be held in other states to submit an application for approval as a Washington course. You can find a complete list of currently approved courses and forms for submitting new course applications and instructor candidates at:

http://lni.wa.gov/TradesLicensing/Electrical/LicenseExamEd/Education/ContinueEd/default.asp

Permit Fees For Completing Projects Started By Others.

The economic downturn has caused many projects to halt construction prior to the final inspection. In many instances the property has changed hands and new electrical contractor is hired to finish the job. The new contractor must obtain a new electrical work permit to finish the electrical installation.

If service and cover inspection have been completed under a previous permit, the installation will be allowed to be permitted as "Other Inspections." The permit fee and description can be found in WAC 296-46B-906(11). The minimum portal to portal fee will cover one hour of time to finalize the inspection process. Permit applications for "Other Inspections" must have an accurate description of work.

Fees for additional time may be added to the permit if necessary. Any work not included on the original contractor's work must be described and permitted at the normal fees (e.g. new septic, feeder, or other item not on the original permit).

HVAC Equipment Nameplates

HVAC installers and contractors please take notice. We want you to have the opportunity to avoid the expense of return trips to make corrections by being aware of the marking requirements that apply to HVAC equipment. Failure to complete the equipment nameplate information (i.e. heat strip and other marking) will result in electrical corrections to the electrical contractor for not meeting the marking requirements, NEC 424.28 and for not following the equipment manufacturer's instructions, NEC 110.3(B). Other corrections may be issued of the wiring to the equipment is not appropriately sized and protected.

The person installing the furnace equipment is initially responsible for marking the label accurately. However, the electrician connecting power to the furnace has the responsibility to not connect wiring to the equipment if the label is not properly marked.

Avoid delaying your jobs by fully and accurately completing the required information on the nameplate. Only connect the equipment if the equipment nameplate is completely filled out and accurate.

"Normal" Electrical Inspection Of Equipment And Machinery

Successful "normal electrical inspection" of the electrical system of unlisted equipment or machinery requires all the equipment's electrical system components and materials to be listed and labeled and installed in conformance with the NEC. Complex installations may require drawings of the system and additional fees to cover inspection time.

The electrical system of unlisted equipment not constructed to the NEC must be proven to meet an appropriate electrical safety standard by having the equipment field evaluated by an approved testing laboratory or by engineering review (for industrial utilization equipment only).

More information can be found in related article published in the November 2007 *Electrical Currents*:

http://lni.wa.gov/TradesLicensing/Electrical/files/currents/elc0711.pdf

Labor & Industries Longview Office Has Moved To Kelso

The Longview office of the Department of Labor & Industries (L&I) has relocated to 711 Vine St. in Kelso. Office hours and telephone numbers will remain the same.

L&I is moving because of a state goal to use space in state-owned buildings wherever possible. With the expiration of the Longview office lease, L&I was able to move to a space in Kelso previously occupied by another state agency.

Electrical Question of the Month

This Month's Question: In a dwelling unit, what combination of dedicated circuits would be allowed to supply receptacles that supply three 120 volt ½ horsepower garage door openers? **A)** One 15 amp and one 20 amp circuit, **B)** Three 15 amp circuits, **C)** One 20 amp circuit, **D)** Just add them the same circuit as the other garage outlets.

September's Question: Are main breakers still required for temporary power service panels?
A) Always, **B)** Never, **C)** Only if there are more than six service disconnects
The answer is: **C)** Only if there are more than six service disconnects. [NEC 408.36, Exception #1]

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ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 12 No. 9** **September 2009**

Electrical Inspector Don Holland Passes Away

Donald Holland passed away at the age of 56 years old on August 17, 2009 in Everett, WA. Don was born April 7, 1953, in Yakima to Joe and Tressie Holland. After High School, Don served in the U.S. Marine Corp, completed Perry Technical Institute, and became an electrician. Don worked as an electrician for 20 years in the Yakima Valley. In 1999, he moved to Arlington, Washington where he was employed as an L&I Electrical Inspector in the Everett area. It was there that he found many new friends and shared laughs with his co-workers. Don will be deeply missed.

Safety Tip of the Month!

Avoid backing accidents by parking your vehicle so that backing is not required when you leave.

Positioning your vehicle while hazards and obstacles are in view will reduce the chances of an accident when you leave.

New Publications for Homeowners

Homeowners may be unaware of requirements that help ensure safe electrical installations are made on their property. New publications are available to assist homeowners in making informed decisions. The best way to ensure the work done on your property is safe is to make certain that it is permitted and inspected. There is very little electrical work that is exempt from permitting and inspection. The new publications are available at:

http://www.lni.wa.gov/IPUB/500-078-000.pdf and *http://www.lni.wa.gov/IPUB/500-115-000.pdf*

Electrical Permit Fees

The fees listed in WAC 296-46B-906 must always support the number of progress inspection trips requested by the permit holder and the amount of time necessary to perform the inspection. All inspections are based upon ½ hour of inspection time. Each progress trip or ½ hour, whichever is more, is charged at $36.40. Any fee less than $72.80 must have no more than ½ hour of inspection time.

If a permit purchaser buys a permit for less than $72.80 and schedules the work so two separate progress inspections are needed, the initial fee does not support the cost of the inspections. An additional trip fee ($36.40) will be added to the original fee to support the second inspection request.

Electrical permit fees must cover the time and number of trips required for all progress inspections (e.g. ditch cover, concrete encased electrodes, slab, cover, service, etc.). Requests for multiple progress inspections may result in the assessment of additional trip fees.

If corrections have been issued during a progress inspection, the department does not charge for the first return trip to verify the safety corrections have been made. If the corrections are not made or were made in a way that is not code compliant, the next return trip will be assessed a $36.40 trip fee because the work is not ready for inspection.

When a final inspection is called, all work should be complete and code compliant. The cost of the initial final inspection is included in the initial base fee. The department does not charge for the initial final inspection. If deficiencies are noted during the final inspection, additional fees will be assessed because the work is not ready for inspection.

Unlisted Low Voltage Devices And Equipment Must Be Fed From A Listed Class 2 Transformer

For some types of low voltage systems (30 volts or less) it can be difficult or impossible to find listed low voltage devices and equipment. Field evaluation is always an option for unlisted equipment, but in many cases the cost of the evaluation far exceeds the cost of the equipment. For some low voltage equipment there is an alternative.

Unlisted low voltage utilization equipment or devices will be approved if they receive their power from a listed Class 2 transformer or power supply and comply with all of the following.

- The Class 2 transformer is listed and used in accordance with the manufacturer instructions.
- The wiring method used complies with NEC 725.
- The secondary voltage of the Class 2 transformer/power supply does not exceed 30 volts.
- The secondary side of the Class 2 transformer/power supply is protected by a 5-ampere maximum fuse, or a fuse derived by dividing 100 VA by the secondary voltage whichever is less.
- A permanent marking is affixed as near as practicable to the transformer/power supply and must indicate the size and type of replacement fuse, or the fuse must be integrated into the transformer/power supply assembly requiring replacement of the unit.
- The Class 2 circuit does not supply life safety equipment or emergency egress, such as: fire alarm, rescue systems, and classified (hazardous) locations.
- The equipment and devices must be located exclusively within the Class 2 circuit (i.e. isolated from all other electrical circuits).

● Wiring Methods for Luminaires In Patient Care Areas

The health care facility administrator, with oversight from the Department of Health, is responsible for determining which areas of a medical facility are patient care areas. Corridors, storage rooms, lounges, dining rooms, or similar areas are not usually classified as patient care areas.

In patient care areas, NEC 517.13(A) requires that all branch circuits are provided with an effective ground-fault current path by installation in a metal raceway system or in a cable with a metallic armor or sheath that is listed for grounding. A separate equipment grounding conductor, installed in a non-metallic raceway or in a cable, that lacks a metallic armor or sheath listed for grounding is not a substitute for this requirement.

An additional insulated equipment grounding conductor described in NEC 517.13(B) is required only if the luminaires are lower than 7½ feet above the floor or have switches located in the patient care vicinity

The patient care vicinity is generally defined as anywhere within 6 feet of a patient's bed up to a height of 7½ feet above the floor.

● Are You Celebrating A Birthday This Fall? Save Money and Renew Online!

Renewing your license or certificate online is quick and easy. You will receive it much faster and save money at the same time. You can renew as early as 90 days before your expiration date at:

http://lni.wa.gov/TradesLicensing/LicensingReq/Legal.asp

You are only permitted to renew if all of your continuing education requirements are met. Your licensing information including your continuing education credits can be viewed at at*:*

https://fortress.wa.gov/lni/bbip/Search.aspx .

A Washington approved continuing education provider is responsible for posting your course credits to the system within seven days of course completion. If you have attended a Washington approved course and have not been properly credited, please contact the course provider to resolve the matter.

If you are looking for a continuing education class or basic classroom education course to fulfill your education requirements, here is the link to the list of Washington approved courses:

http://lni.wa.gov/TradesLicensing/Electrical/LicenseExamEd/Education/default.asp

● Electrical Question of the Month

This Month's Question: Are main breakers still required for temporary power service panels?
A) Always, **B)** Never, **C)** Only when there are more than six service disconnects

August's Question: How many voting members comprise the Washington State Electrical Board?? **A)** 13, **B)** 14, **C)** 15, **D)** 16. The answer is: **B)** 14 voting members (RCW 19.28.311).

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 12 No. 8** **August 2009**

Class B Labels --- Easy To Use --- Saves Time And Money

About 3,000 Class B permits are used by contractors each month. Using Class B basic electrical work permits reduces costs, time and money, to the contractor, customer, and the electrical program while maintaining an acceptable level of inspection oversight. Class B labels are used for specific "*Electrical work that requires minimal electrical circuit modifications and has limited exposure hazards.*" The specific rules for using Class B labels are found in WAC 296-46B-908. A single Class B label may be used for different types of Class B work (e.g. extended circuit, motor replacement, etc.) when all the work is done at the same time.

The labels are packaged in books of 20 and can be purchased or ordered, using your contractor deposit account for mail shipment, from any of our service locations for only $200! If you purchase 100 thermostat permits a year, you save $2,640 by using Class B permits instead of a normal permit.

Safety Tip of the Month!

It's that time of the year again when we all have to be extra vigilant in ensuring we stay hydrated.

When working in the hot sun or in enclosed spaces that are subject to extreme heat make sure you drink plenty of water

When in doubt

Have A Drink!

Each label has two parts. Each must be filled out before work is begun. You can fill the labels out at the office or jobsite, whatever works best for you! Just remember to completely fill out both parts of the label with accurate legible information. The jobsite portion of the label must be affixed to the electrical panel, control panel, or equipment before starting the installation. The contractor portion of the label must be sent to the address printed on the bottom of the label within 15 working days from the date on the label. The date must be the date the label is affixed.

A Class B label becomes an active permit when it is posted and may be inspected on a random basis. You do not request an inspection for a Class B. L&I will make the arrangements for access for the inspection. If access cannot be arranged with your customer, you will need to assist in getting access.

Class B permits have been a very popular subject in the Electrical Currents Newsletter. Here is the link to a fully searchable compilation that contains every edition of the Electrical Currents ever published: http://lni.wa.gov/TradesLicensing/Electrical/files/currents/ALLCurrents.pdf . Just type in the words *Class B* in the find or search box and you will have over 150 hits. There have been some changes over time, so always remember that the most current information always takes precedence.

For more information, send your questions to electricalprogram@lni.wa.gov and one of our program specialists will assist you.

Portable And Vehicle Mounted Generators: Grounding Electrode Exemptions

Requirements for the use of portable and vehicle mounted generators are often misunderstood. The frame of a portable or vehicle mounted generator is not required to be connected to a grounding electrode for a system supplied by the generator if the conditions of NEC 250.34 are met. Most equipment manufacturer's instructions refer you to the NEC for grounding requirements and provide specific grounding connection instructions if the NEC requires connection to a grounding electrode.

A connection to a grounding electrode is not required when a portable or vehicle mounted generator only supplies equipment mounted on the generator and/or cord and plug connected loads supplied through the grounded receptacles on the generator. Equipment grounding is accomplished through the frame of the generator. For a vehicle mounted generator, the vehicle frame must be bonded to the generator frame. If the generator manufacturer's instructions specifically require connection to a grounding electrode, NEC 250.34(A) does not apply and a grounding electrode system must be installed.

Occupational Safety & Health Administration (OSHA) has a publication addressing the generator grounding electrode exemption and potential hazards when generators are connected to a grounding electrode. Parts I and III of their publication provide excellent insight into this topic. This publication can be can be viewed at:
http://oshaprofessor.com/Portable%20Generators%20and%20OSHA%20Construction%20Standards%203-05.pdf

Can Specialty Contractors Bid Electrical Jobs That Have Work Out Of Their Allowed Scope Of Work?

Specialty electrical or telecommunication contractors cannot normally bid electrical work outside the scope of work allowed for their electrical contractor license. In very limited situations a specialty electrical or telecommunications contractor may bid on and subcontract an electrical project that contains electrical work outside the scope of work allowed for their specialty electrical license. The electrical project's work that is outside their allowed scope of work must be an insignificant portion of the total project and be directly associated with the portion of work that is within the specialty contractor's allowed scope of work. Consider the following scenario.

A building owner solicits bids for a large project to install a low voltage energy management system in a commercial office building. The bid's proposed installation includes a 120 volt branch circuit that is necessary to power the energy management system's electrical controller. In this example, 98% of the project is within the EC06 limited energy specialty contractor's allowed scope of work.

The 120 volt branch circuit is not in the EC06 contractor's allowed scope of work. However, the EC06 specialty contractor is allowed to bid and subcontract this project because the branch circuit is an insignificant portion of the overall project and is directly associated the electrical work that is with the EC06 contractor's allowed scope of work (i.e. powering the low voltage energy management system). In this example, the EC06 contractor may subcontract the work that is outside the scope of their 06 license (i.e. the branch circuit) to an EC01 general electrical contractor.

If any portion of this electrical project had been not directly associated with the low voltage portion of the work, or if a significant portion of the work had been outside of the scope of work allowed for the specialty contractor, then the EC06 limited energy specialty electrical contractor would not be allowed to bid or subcontract the project.

It is also important to remember that if there are multiple licensed electrical contractors working on the same project, each contractor will have its own permit and electrical crew separate from the other contractor(s).

HVAC Ductless Split-systems Are Not Appliances

Because of their versatility, efficiency, and energy rebate incentives ductless split systems are becoming more popular in commercial and residential jobs. Equipment manufacturers and NEC 440 also sometimes refers to HVAC equipment as an appliance. However, the WAC 296-46B-100(7) and (33) definitions for an appliance are very limited. Under the WAC definitions, fixed air-conditioning/heat pump equipment is never an appliance. In addition, equipment that either supplies or receives power to/from another piece of equipment is never an appliance. Do not make the mistake of applying the rules of NEC 422 Appliances when installing this equipment.

Because these listed assemblies include a hermetic compressor this equipment falls under the installation rules of NEC 440 Air Conditioning and Refrigeration Equipment.

These systems can be very simple (e.g. one outdoor and one indoor unit),or very sophisticated (e.g. multiple indoor units located in different rooms (zones)). The outdoor and indoor unit may be supplied from separate branch circuits or the indoor unit may be supplied directly from the outdoor unit. A 06A specialty electrical contractor can install the units and all low voltage conductors. A 01 contractor or 02 contractor, for residential, must install all line voltage conductors and equipment including any disconnecting means that is not installed in the equipment by the manufacturer.

Electrical Question of the Month

This Month's Question: How many voting members comprise the Washington State Electrical Board? **A)** 13, **B)** 14, **C)** 15, **D)** 16.

Last Month's Question: The conductor intended to be used as the grounded conductor in a flexible cord must have a continuous marker that distinguishes it from other conductors. Which of the following methods is <u>not</u> an approved distinguisher? **A)** white or gray colored insulation, **B)** number or letter, **C)** tinned conductor, **D)** white or gray colored braid. The answer is: **B)** [NEC 400.22].

Previous Month's Question: It was pointed out by several of our observant stakeholders that there actually was no correct answer to choose from for the "Question of the Month" in the month of June. The closest answer was B) 8,800, but the actual answer should have been 8,500. **Good catch!**

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 12 No. 7** **July 2009**

Really… Is There Anything This Electrical Inspector Can't Do?

Al Reed-Costa is one of those rare individuals who seem to succeed at everything he puts his mind to. Whether graduating from the apprenticeship and becoming a journeyman electrician, operating an electrical contracting business, or working as a L&I plans examiner and assisting with ECORE compliance, Al not only succeeds, but excels.

So what does someone like Al do in his spare time – **How about world class weightlifting!**

Some of Al's most notable achievements so far include:

- Won back-to-back National Collegiate titles and set new national records with 330 (snatch) and 369 (clean & jerk) lbs. while simultaneously working as an electrical apprentice.
- Took 5th Place in the 2000, World Collegiate Championship.
- Won back-to-back Masters National titles for 35-39 year olds, setting new national records with 340 (snatch) & 419 (clean & jerk) lbs.
- Went to the 2008, Olympics in Beijing, China as an assistant coach for Melanie Roach.
- Holds the state record for the Snatch with 155 kg (341 lbs.) and Clean and Jerk with 190 kg. (418 lbs.).
- Reunited with his high school sweetheart and is planning to get married in 2010.

Al began lifting in junior high at the age of 14 as a way to build strength for wrestling. He knew right away he had found something he really enjoyed. In 1991, he moved from his home in New Jersey to Washington to train with his USA national coach, John Thrush of Sumner, WA. In 1996, he began his apprenticeship with the South Western Washington JATC. In 2006, he started a small electrical contracting business and operated it until joining our team, in 2008, as a plans examiner.

Al continues to lift competitively, is training for the 2012 Olympics team, and enjoys coaching young athletes. Al's all time heaviest lift was a back squat training lift of 347 kg. That's 765 pounds!

When asked, "What is the key to your success?" Al replied, "I try to focus on what is at hand without losing sight of my ultimate goal. It's all about the process rather than the destination. This is especially true when working with young people. I tell them life is a marathon, not a sprint. Things will happen and it'll get you down if you let it. Keep in mind you can only control yourself, and do your best to keep moving forward. You have to believe in yourself, and those around you."

Electrical Board – Electrical Contractor Position Vacancy

There is currently an electrical contractor position vacancy on the Electrical Board. The application form is available on the Governor's website at:
http://www.governor.wa.gov/boards/application/default.asp

Application must be made using the Governor's form. Applicants must also send a resume to the email address listed on the Governor's website. Recommendation letters should also be sent to the Governor's office. If you have

Safety Tip of the Month!

Approximately 100,000 annual vehicle crashes are attributed to drowsy drivers. When driving your vehicle for long periods watch for the signs:

- Excessive yarning
- Nodding
- Disjointed thoughts
- Lane drifting
- Vision blurring or lack of focus
- Forgetting the last few miles

Don't become a statistic!

questions about the position or the Electrical Board, contact: Crystal Forsberg at (360) 902-5249.

Contractors Without Electrical Administrators Must Reassign Within 90 Days

If an assigned administrator/master electrician chooses to separate from an electrical contractor they must submit a "Change Assignment of Administrator/Master Certificate" with the required fee within 10 days of separating.

The department will automatically un-assign the administrator/master electrician if the administrator/master certificate expires, is suspended, or revoked.

In either case, the contractor will receive a letter from the department stating that the assigned administrator/master electrician has been separated from the company and the contractor has 90 days from the date of separation to assign a new administrator/master electrician. If a new assignment is not made, the electrical contractor's license will be suspended. Once suspended, the contractor will need to pay a reinstatement fee of $47.30 to be reactivated and have an assigned administrator/master.

Whether assigning or un-assigning, use form F503-009-000. The fee for this is $35 fee. The form can be found on our website at: http://www.lni.wa.gov/FormPub/Detail.asp?DocID=1813

Correction Reduction Initiative New Contractor Group For Fiscal Year 2010

The Correction Reduction Initiative for Fiscal Year 2009 ended June 30th and has once again been very successful in appreciably lowering the number of corrections written to contractors in the initiative.

A new group has been identified for Fiscal Year 2010 (July 1, 2008 through June 30, 2009). The initiative this year will focus on all electrical contractors who receive more corrections per inspection than the average electrical contractor. The Electrical Program will work with these contractors to help them improve - saving them the time and money necessary to revisit jobsites to make corrections.

Driving Directions Are Required For Electrical Work Permit Inspections

You must provide the electrical inspector with adequate driving directions to your jobsite. If you fail to provide clear driving directions on your electrical permit, the inspector may not be able to find your jobsite. This will result a delay of your inspection, multiple trips for the inspector, additional fees for you, and possible civil penalties.

You must provide turn by turn directions from the nearest main crossroad to the permit jobsite. Detailed directions enable electrical inspectors to locate your jobsite quickly saving everyone time and money.

Never assume that the inspector is familiar with your local area. Inspectors routinely inspect areas that are not familiar to them. Some addresses are very simple to find. Others are not so easy – particularly those in rural or farming areas. Be as detailed as possible and use landmarks that can be easily seen from the road. Never reference web site hyperlinks such as Map Quest or Google Map or make reference such as "see Thomas Guide page 44".

Give the same directions you would give to a policeman, firefighter, or emergency medical technician if you needed them there right away.

The WAC Revision Process Continues

As mentioned in previous Electrical Currents (see May), Washington Administrative Code WAC 296-46B is being revised. Stakeholders may comment on proposed changes during the public comment period or at the public hearing that is tentatively scheduled to be held at the L&I Building, Room S117, 7273 Linderson Way SW, Tumwater, WA, 98501 on August 26th. The tentative effective date is October 31st.

Electrical Question of the Month

This Month's Question: The conductor intended to be used as the grounded conductor in a flexible cord must have a continuous marker that distinguishes it from other conductors. Which of the following methods is not an approved distinguisher? **A)** white or gray colored insulation, **B)** number or letter, **C)** tinned conductor, **D)** white or gray colored braid.

Last Month's Question: For a 240V, 3-wire circuit, what is the minimum branch-circuit load allowed for a 13.25 KW household electric range installed in a dwelling unit?? **A)** 9275 watts, **B)** 8800 watts, **C)** 8000 watts, **D)** 6160 Watts The answer is: **B)** 8,800 [NEC Table 220.55 see note 1.].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 12 No. 6** **June 2009**

New Law Requires Electricians And Trainees To Carry Photo Identification

Governor Gregoire signed HB 1055 into law in April, 2009. This new law will be effective July 26th and amends the existing language in RCW 19.28.271. After July 26th, all electricians and trainees must be in possession of their electrical certificate and government-issued photo identification at all times when working as an electrician or trainee. Anyone found to be in violation of this law is subject to civil penalties.

Personal Protection Equipment and Knowledge Saves Lives

Whenever you enter a jobsite you should always ask yourself:

- Am I wearing my hardhat, safety glasses, hearing protection, appropriate clothing, and safety shoes or boots?
- Do I know what the potential hazards are and how to recognize them?
- Should I re-assess the potential hazards as I enter different areas or situations on this jobsite?
- Where is the nearest first aid kit, fire extinguisher, and telephone?

Only An Apprenticeship Training Director Can Submit Electrical Apprentice Hours

In the past, electrical contractors who are employers of apprentices registered in an apprenticeship program (training agents) were allowed to report electrical training hours for an apprentice directly to the department using an Affidavit of Experience signed by the contractor. This practice is in conflict with WAC 296-46B-965(11)(c). The only way a contractor can submit an affidavit of experience for a trainee is if that trainee is not enrolled in an electrical apprenticeship.

The path to exam eligibility for registered apprentices is through the completion and graduation from an approved apprenticeship program. A Washington State Apprenticeship Council completion certificate is the only acceptable documentation for graduation. The only way to get credit for training hours while enrolled in an apprenticeship program is through the Apprenticeship Training Director (or Apprenticeship Chairman, Secretary, etc., if there is no formal Training Director). The Training Director has the ability to report electrical training hours to the department on an Affidavit of Experience during the apprenticeship. Some Training Directors do not submit training hours for apprentices because apprenticeship programs often require more on-the-job experience than the minimum on-the-job experience required for non-apprentice trainees.

Supervision Requirements For Trainees

Trainees working for an electrical contractor must be appropriately supervised by a properly certified electrician not less than 75% of the total time on each jobsite or 100% of the time for certain specialty contractors (e.g. 03A, 06B, 07A, 07B, 07C, 07D, 07E, and 10). If an L&I inspector finds a trainee working without supervision on a jobsite, the inspector will give the trainee an opportunity to provide evidence to document the proper supervision is being provided. This will come in the form of a document called Electrical Trainee Supervision Statement.

This legal document must be filled out and signed by both the trainee and the supervising electrician and returned to the inspector. If the Electrical Trainee Supervision Statement is not returned within 24 hours, the trainee, electrical contractor, and assigned administrator/master electrician may receive a civil penalty for the trainee working without proper supervision per RCW 19.28.161(3). Both the trainee and supervising electrician must attest to the proper supervision. If the document is fraudulent, additional civil penalties may be assessed.

WAC Revision Proposals

WAC 296-46B is being revised. Since all the proposed changes are administrative rather than technical, the Technical Advisory Committee will not be convened. Stakeholders may comment on proposed changes during the public comment period and the public hearing tentatively scheduled for July 29th in Tumwater. The rule's targeted effective date is in late September.

WAC Proposal – Distance Learning Continuing Education Classes

A WAC proposal will require distance learning class applications (i.e. Internet and correspondence) to demonstrate that the course includes the same or reasonably similar information content as a classroom course with similar clock hours. The application must also demonstrate how the number of requested clock hours was determined and monitored by the sponsor. Basing distance learning courses on the actual clock hours necessary to complete the course will ensure that students are actually engaged in their course material for the number of hours being credited. For Internet courses, sponsors must use software that tracks time based on when a student is actively engaged in the course material.

This proposal will align the requirements for distance learning courses with those used by other state agencies. All currently approved distance learning courses will be allowed to remain in use until they expire. All new distance learning classes will be required to demonstrate that they meet the requirements of clock-hour based distance learning.

First Aid And Safety Classes

The WAC proposal includes a clarification that all classes must be approved by the L&I Electrical Program before continuing education credit is granted. In the past, the Electrical Board has allowed First Aid classes to be allowed without review. Upon the effective date of the WAC revisions, all classes, including First Aid must have L&I approval and the course sponsor must use the on-line roster reporting system. In addition, the board has asked that First Aid classes be limited to a maximum of 4 hours of credit towards the individual's total continuing education requirement.

Workplace safety classes such as NFPA 70E – Standard for Electrical Safety in the Workplace are limited to a maximum of 12 hours of credit towards the individual's total continuing education requirement. These classes are not considered to be First Aid.

Current Policy Change And WAC Proposal – One-Line Diagram And Calculations For Alternate Energy Installations

There is common language in WAC 296-46B-445 (Wind Driven Generators) and WAC 296-46B-690 (Solar Photovoltaic Systems) which require the installer to submit installation design documents to the inspector at the time of the inspection request. We have found that submittal before the inspection is inefficient and difficult for both the department and the installer.

We now allow those documents to be provided on the jobsite at the time of inspection. This policy change will be formalized in coming WAC revisions.

The installer must leave the required documents at the jobsite in a weather resistant plastic bag or equivalent protective container for the electrical inspector to review upon arrival at the jobsite. When the electrical inspector leaves, the documents will be left in the container available for the next person (i.e. building official, owner, etc.) that needs the documentation.

New/Replaced Receptacles On An Existing Residential Branch Circuit Must Be Tamper-Resistant

NEC 406.11 requires all dwelling unit 125 volt 15 and 20 ampere receptacles to be tamper-resistant. If an existing branch circuit is extended to allow for the addition of a new receptacle(s), the newly installed receptacle(s) must be tamper-resistant. Except when using a non-grounding type receptacle, receptacles that are replaced in an existing circuit must also be tamper-resistant.

Electrical Question of the Month

This Month's Question: For a 240V, 3-wire circuit, what is the minimum branch-circuit load allowed for a 13.25 KW household electric range installed in a dwelling unit? **A)** 9275 watts, **B)** 8800 watts, **C)** 8000 watts, **D)** 6160 Watts

Last Month's Question: Which of the following types of electrical installations are covered by the NEC? **A)** ships, **B)** above-ground mining machinery, **C)** railway rolling stock, **D)** none of the answers. The answer is: **D)** [**NEC 90.2(B)(1), (3)** and Federal Mine Safety & Health Act of 1977, Public Law 91-173, as amended by Public Law 95-164].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 12 No. 5** **May 2009**

Administrative Changes Only To The WAC In 2009

L&I has begun the process to change several administrative sections of WAC 296-46B. At their April meeting, the Electrical Board approved the department's recommended changes. Because the proposed changes are of an administrative nature, and to avoid the expense and stress on the program's resources the Technical Advisory Committee will not be convened. Stakeholders can comment on proposed changes during the public comment period and hearing.

Safety Tip of the Month!

Outdoor electrical cord connected power tools and other appliances should only be used when you have ensured that all of the flexible cords are free of cuts and abrasions that may expose live conductors. GFCI protection is essential outdoors.

Please don't let warm outside weather diminish your electrical safety judgment.

Requirements For Electrical Equipment

RCW 19.28.010(1) requires all electrical equipment to be manufactured to an applicable electrical safety standard. WAC 296-46B-010(8) clarifies that electrical equipment must be:

- Manufactured to applicable electrical safety standards recognized by the department (Note: A variance request must be submitted for this approval. Manufacturer documentation of standards for each component will be required before approval will be granted.); or
- Approved by listing or field evaluation by an L&I approved electrical testing laboratory. Contact information for all approved electrical testing laboratories is available on our website at:

  http://www.lni.wa.gov/TradesLicensing/Electrical/Install/ProdTest/default.asp.

There is a difference between a 'Listed' and 'Recognized' mark. The marks to the right are some of the more common 'Listing' marks used in Washington. A listing mark will always be accompanied by the product name (e.g. 'portable lamp', 'industrial control panel', etc.) to help you in ensuring that the listing is appropriate to the use of the product.

Commonly Used & Approved Listing Marks

You may find that some of the individual components within a listed product have an Underwriters Laboratories (UL) recognized component mark (backwards *italic UR* shown below). UL says, *"Some manufacturers may claim that because the components are UL recognized, the product in which they are assembled meets all the necessary requirements. But that's not necessarily the case, because the UL Recognized Component Mark means that the component alone meets the requirements for a limited, specified use…UL's Component Recognition Service covers testing and evaluation of component products that are incomplete or restricted in performance capabilities. These components will later be used in complete end-user products or systems Listed…These components are not intended for separate installation in the field. They are intended for use as components of complete equipment…Component/end-product compatibility is the critical link between certification of a component and certification of the end-product in which the component is used."*

Air Compressor Marking Requirements

Air compressor manufacturers do not typically list their products to the UL 1450 standard for compressors. They often use a mix of listings, recognized components, and other standards when building their equipment. UL 1450 is an encompassing standard that can be used for listing or field evaluating an air compressor.

But because compressors are often manufactured in multiple configurations (e.g. tank mounted, skid mounted, and with multiple accessories, etc.) only a very few manufacturers use UL 1450. If the compressor is not listed to UL 1450 by an approved electrical testing laboratory, the inspector has only two options available. The equipment must either be approved by field evaluation or by a variance request certifying that all of the compressor's components have been manufactured and installed in accordance with all applicable standards. All variance requests will be evaluated on a case-by case basis

before approval. A variance request is site specific. Variances cannot be applied to multiple installations. Listing is always the preferred method of documentation that the equipment is appropriate.

● A Third Engineering Evaluation Firm Has Been Accredited To Review Industrial Equipment And Wind Turbines

David Picatti of Picatti Bros. Inc. is now approved to perform the evaluation/review of unlisted industrial utilization equipment. Mr. Picatti joins the other two approved engineers: Arthur Stokes of Parker Messana & Associates and C. Sankaran of Power Science Engineering who are both based in the Seattle/Tacoma area.

While all approved engineers are able to work anywhere in the state, David Picatti, who is located in Yakima, is the first engineer based in Eastern Washington to seek and attain approval. Contact information for all the approved engineers can be found at:

http://www.lni.wa.gov/TradesLicensing/Electrical/Install/ProdEngineer/default.asp

● When Will The Electrical Exams Be Revised To The 2008 National Electrical Code?

We are asked this question on a regular basis. Late summer 2009 is the current target date for implementing electrical exams based on the 2008 NEC. If you are an exam candidate, this will not affect your exam preparations. Certification exam questions do not change much with a new NEC edition. We make every effort to remove questions from examinations that are Code version dependent. New or altered NEC definitions or load calculation details are exceptions that may be version dependent.

All exam questions are based on basic safety, code, electrical theory, and state electrical law and rules. We expect electrician exams to verify entry-level ability to work without supervision. This skill includes the ability to use the installation standards (open-book use of the NEC, law, and rules) to solve problems that may be outside the worker's actual hands-on experience. We intentionally do not load certification exams with brand new 2008 Code revisions. In our system, staying current on new NEC changes is not dependent solely upon the certification exams, but is continued by mandatory continuing education for electricians.

Most changes in the exam database are reference updates for specific questions that are relocated within the code. We are being especially careful in modifying questions and references this Code cycle because we are migrating all of the data from the old LaserGrade system into the new PSI test platform. PSI acquired LaserGrade last year and we have been gradually making the complete transition to the more advanced PSI system.

When the transition is complete, the administrator and electrician exams will have the same basic "blueprint" as the current exams and the exam "time allowed" will remain the same. The similarities then end. The questions in the item bank will be statistically analyzed and the PSI system will be able to generate a unique, randomized, test for each candidate while maintaining standards of content and psychometric equivalence.

A fixed number of exam forms with static question items on each will become obsolete in the electrical program exams. People who "harvest" questions from exams to sell to individuals who fear exams will soon have to memorize all of the several thousand questions in our database. In our open-book exam format any exam candidate should do better if they primarily spend their time learning to effectively navigate the NEC, WAC, and RCW. For most of us, our preparation for our first electrical certification exam becomes the foundation on which we build our careers as safe, competent, professional electrical workers.

● Electrical Question of the Month

This Month's Question: Which of the following types of electrical installations are covered by the NEC? **A)** ships, **B)** above-ground mining machinery, **C)** railway rolling stock, **D)** none of the answers.

Last Month's Question: Conductor fill including splices cannot exceed ___% of the area within a surface non-metallic raceway where the cover is accessible and capable of being opened in place after installation. **A)** 53%, **B)** 60%, **C)** 75%, **D)** 0% The answer is: **C) 75%** [NEC 388.56].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 12 No. 4** **April 2009**

We Are Recognized As An Electrically Safe State

Mike Holt a well known trainer and member of the NFPA code making panel(s) has compiled an analysis conducted by his firm which rates and assigns a safety grade to each of the 50 states. Washington did very well when compared to other states. In fact, only three states scored higher. This is an indication that we are doing things right. So why is it that we've distinguished ourselves from the rest of the country?

Clearly, the citizens of the state of Washington have placed a priority on safety for electrical equipment and installations. This is best accomplished through a highly skilled team of licensed electrical contractors using certified electricians and trainees who install their electrical work to established and well-defined standards. Verification is done with electrical safety inspections by competent city and state inspectors enforcing these adopted safety standards. As the largest "authority having jurisdiction" in Washington L&I has been a major contributor toward this distinction:

- We have comprehensive coverage across Washington with 22 field offices from Port Angeles to Pullman. Our offices are staffed by customer service and inspection teams that know how to find solutions for our customers.
- Our highly experienced inspection workforce is in the field every day responding to requests for inspection of permitted electrical work responding within 24 hours for 90% of inspections requested. Our primary focus is to ensure public safety. Our inspectors are given the latitude to use their knowledge and experience to make situational judgments about electrical safety risks when inspecting. Our highly specialized Electrical Compliance Outreach Regulation and Education (E-CORE) team along with the electrical field inspectors, continually work to find and expose the illegal activities of the underground economy.
- Customers, stakeholders, and inspectors are supported by our Specialty Compliance Services electrical staff at our Tumwater headquarters, which include the Equipment Evaluations & Continuing Education, Licensing & Certification, and Audit & Citations teams. We process tens of thousands of applications and files each year for licenses, certificates, classes, and laboratory approvals. The Chief Electrical inspector, supported by technical and administrative specialists, is responsible for the electrical program's technical and enforcement policy, leadership, and quality assurance.

Safety Tip of the Month!

When installing or using listed or labeled equipment it is important to always follow the manufacturer's instructions. This is particularly true when choosing a light bulb for the light fixture in your home.
Not only can an over-sized bulb shorten the life span of the light fixture, it can build up excessive heat which can lead to equipment failure or even fire.

The Previously Evaluated Equipment List Is Available On Our Website

A list of Industrial utilization equipment previously reviewed and approved by an accredited engineer has been compiled and is maintained by the department on our electrical Web site under the link to "Installation Information". See WAC 296-46B-903 for a description of the type of industrial utilization equipment eligible for engineering evaluation.

The department does not regulate the pricing for engineering evaluation services. The customer generally sees a significant reduction in costs for their engineer equipment evaluation when an approved engineer has previously evaluated and labeled the same model of equipment in Washington. The secondary evaluation is made to ensure the equipment is the same (identical) equipment and it has not been altered, modified or damaged.

If you are considering purchasing equipment to perform a specific manufacturing task or process (e.g. milling machine, wine making equipment, bottling or packaging equipment, etc.) you may find it on the list. If your customer has specialized manufacturing equipment that is likely to qualify for engineering evaluation, you should check the "Reviewed and Approved Industrial Utilization Equipment List" first. It could save your customer money. The list can be found at:
http://www.lni.wa.gov/TradesLicensing/Electrical/Install/ProdEngineer/default.asp

Expired Electrical Permits That Have Had No Inspection Request

It is important to make certain your work is inspected. To fulfill our mandate of Keeping Washington Safe, we ensure that all appropriate inspections are made. An inspection request must be made when: within three business days of fully completing the job or within one business day after energizing any work (see WAC 296-46B-900(10)(a). Progress inspections may also be requested for: cover, service, etc.

We have been finding many expired permits where an inspection request has never been made. The permit purchaser has the responsibility of ensuring the work is properly completed and that an inspection request is made. Failing to request the inspection puts the permit purchaser and consumers at risk. We have been working to ensure that all inspections are requested and made.

If the permit purchaser has let the permit expire without the appropriate inspection, a new permit must be purchased and an inspection requested. In addition, the permit purchaser is likely to receive an electrical citation(s) for failing to request the inspection. Be proactive and avoid these problems by verifying the inspection status of your permits before compliance action is necessary. Most permits need at least a progress inspection shortly after the permit is purchased. It is the permit purchaser's obligation to ensure inspections are requested.

Inspection history and information is available for every permit by clicking on the "Permit, Fees, and Inspection" button on the Electrical Program website's homepage:

http://www.lni.wa.gov/tradeslicensing/electrical/.

Appeals Of Non-Compliance Citations

RCW 19.28.131 states that any penalty is subject to review by appeal to the Electrical Board. Be absolutely sure that you have not violated the intent of the electrical law or rules before initiating an appeal. Many times appellants just want their day in court, to be able to tell their side of the story. This may be an expensive undertaking, since very few citation appeals are actually won by the appellant (i.e. less than 1% of all appeals).

The Electrical Board assigns the initial appeal hearing to an Administrative Law Judge (ALJ). The appellant, their attorney (if they choose to have one) and any witnesses will need to appear at the hearing. The ALJ will only rule on whether citations were properly issued under the electrical law (RCW 19.28) and rules (WAC 296-46B). There is no consideration of penalty amounts, prior history, extenuating circumstances, or electrical technical issues. A citation appeal hearing is not like municipal traffic court where the judge may have the ability to reduce a fine.

A $200 appeal bond must accompany all appeals. An appeal is considered to be for each entity that received a citation, for each type of violation. For instance, if XYZ Electric receives 3 citations for failing to buy a permit and wants to appeal, the appeal bond would be $200. If a citation was also issued for failing to call an inspection, the total appeal bond, for all 4 citations would be $400. If the appeal is lost the bond is forfeited to offset the hearing costs and the full penalty amount of the violation must be paid. The bond is not subtracted from the penalty amount. If you win the appeal, the bond is returned and the citations are voided.

Circuit Extensions Allowed By Class B Permits

120V, 20A circuits are allowed to be extended as long as the contractor's scope allows them to do so. You must remember that a contractor may use no more than two class B labels per week on any individual jobsite (i.e. address).

Electrical Question of the Month

This Month's Question: Conductor fill including splices cannot exceed ___ of the area within a surface non-metallic raceway where the cover is accessible and capable of being opened in place after installation. **A)** 53%, **B)** 60%, **C)** 75%, **D)** splices not allowed

Last Month's Question: A utility interactive inverter must mechanically disconnect the connected secondary power source when the primary power source becomes de-energized? A) True, or B) False The answer is: **B) False** [NEC 705.40 Exception].

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ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 12 No. 3** **March 2009**

Focusing The Electrical Program During The Recession

The economic downturn in construction activity led to a significant drop in revenue for L&I's Electrical Program, forcing a reduction in the number of inspectors. On March 31st, the program will be eliminating 25 inspector positions across the state. With 20 percent fewer inspectors, we will not be able to continue to meet our goal of conducting all inspections within 24 hours. There may be slight delays in getting the inspections in some areas of the state. We know how important a timely inspection is to getting the project completed on time, and we will make every attempt to do all inspections as quickly as possible.

We will still be doing our best to improve public safety and will have more focus on the underground economy and anyone who creates an unlevel playing field for electrical contractors who follow the law.

Safety Tip of the Month!

Injury statistics show that the use of ladders presents many hazards. Injuries involving ladders frequently cause permanent disability.

- Always, use the right ladder for the job.
- Get help with heavy or long ladders.
- Make certain your footing is good (e.g. avoid ice, mud, and other slippery conditions).
- Review the DOSH ladder bulletin at: http://www.iapa.ca/pdf/FreeDownloads13-Ladders1.pdf

The construction downturn means more people will choose to do their own electrical work and remodeling. All property owners need to know that an electrical permit and inspection is required for most new, remodeling, and maintenance electrical work to ensure the work conforms to state safety codes and to protect their ability to get insurance or to refinance or sell their property. L&I is increasing its outreach and education efforts to raise awareness of electrical safety and to improve compliance with the permit and inspection requirements.

A poor economy and high unemployment means more people are moving into the underground economy in search of ways to make money or cutting costs by bypassing permits and inspections. This puts the public at risk from unsafe electrical installations and takes work away from electrical contractors who follow the law. As a result, L&I is expanding its outreach and compliance efforts statewide with a focus on:

- Targeting unlicensed electrical contractors and uncertified electricians.
- Identifying electrical work that has not been permitted and inspected.

Reciprocity And Temporary Electrician Certificates Phased Out

The Electrical Board, at their January 29th meeting, weighed all the pros and cons of reciprocity and temporary certification and made a nearly unanimous recommendation to withdraw from all reciprocal agreements and end the use of temporary certification. After the recommendation, L&I stopped issuing temporary electrician certificates on February 23rd and notified all reciprocal states that beginning March 31st, we will no longer honor requests for electrician certification reciprocity.

Over the years, L&I has removed all the obstacles to gaining electrician certification that existed when reciprocity began in the early 1990s. It used to take months to get an electrician certification in Washington when coming from out of state. Today, it is easy for a qualified candidate to have their certificate within a few days, even before moving to Washington.

Having all electrician candidates take the Washington exams will help ensure that the candidate has up to date knowledge of the electrical code and Washington's laws and rules. Taking the Washington exam requires little investment from the candidate (i.e. 4 hours and the $75 exam fee). Exams are available worldwide through our exam administrator, PSI. PSI offers exams 5 days per week with immediate results and the ability to immediately schedule a follow-up exam if necessary. Certificates are issued within three days of examination completion. The only hurdle for a candidate will be taking and passing our electrician examination.

When Will I Get My inspection?

Requests for inspection must be made no later than: three (3) business days after completion of the electrical installation, one (1) business day after any part of the electrical installation has been energized, or before the installation is covered, whichever occurs first.

You may call any L&I office to request an inspection, but this may delay your inspection request. Requests made online before midnight will be available to the inspector the next morning. To request an electrical inspection online, go to:

http://www.lni.wa.gov/TradesLicensing/Electrical/FeePermInsp/default.asp

Because of varying workloads, the response time for an inspection may vary. Most inspections are performed within 1 working day after the request is received. In some areas, inspections may be delayed because of the large geographical area covered by the inspector or short staffing. If any special arrangements are needed to arrange access to allow the inspector to make the inspection, you must contact your inspector between the hours of 8 a.m. and 8:30 a.m. prior to the inspection. Special arrangements could include: access to the site when no one is present, request for specific inspection days or times, or other needed arrangements.

Inspectors will not enter any work site, when minors are present, unless the owner or the owner's adult representative is present.

The electrical inspector may make an appointment, depending upon his/her workload. Keep in mind that appointments may be made for a.m. or p.m. only during normal working hours. Specific times are not set for inspections.

Who Purchases The Electrical Work Permit?

The electrical contractor must purchase an electrical permit for his/her part of the electrical work. If the owner or another contractor does electrical work, each must purchase a separate electrical permit for the portion of the work they are doing. This may appear as if permits are being duplicated for the same work. That is not the case. Each installing entity is required to get a permit and inspection for their part of the electrical work. Without the separation of permits, it would be impossible to determine who is responsible for the work done.

Getting the permit: You may buy your permit at any L&I office or online using a credit card at:

http://www.lni.wa.gov/TradesLicensing/Electrical/FeePermInsp/default.asp

New, Rebuilt, Or Remanufactured Hot Tubs Must Have The Proper Label

RCW 19.28.010(3) says, "*Electrical equipment associated with spas, hot tubs, swimming pools, and hydro-massage bathtubs shall not be offered for sale or exchange unless the electrical equipment is certified as being in compliance with the applicable product safety standard by bearing the certification mark of an approved electrical products testing laboratory.*"

There is no distinction between new, rebuilt, or remanufactured equipment. In order to maintain the original listing of the equipment, only original equipment manufacturer parts or OEM recommended parts may be used during a repair, rebuild, or replacement. If non-OEM parts are used, the equipment must be field evaluated by an L&I approved electrical testing laboratory.

When rebuilding is allowed by accredited electrical testing laboratories the product includes the word "Rebuilt", "Remanufactured", or "Reconditioned" as part of the product listing mark. Though listed rebuilt swimming pool pumps or spa pumps are available as OEM parts, there are no complete spas, hot tubs, or hydro-massage bathtubs products identified with this rebuilt listing mark today.

Electrical Question Of The Month

This Month's Question: A utility interactive inverter must mechanically disconnect the connected secondary power source when the primary power source becomes de-energized? **True** or **False**.

Last Month's Question: Where EMT is installed on the roof of an office building for the purposes of supplying power to an HVAC heat pump, is an equipment grounding conductor required to be provided within the raceway? **A)** Yes, **B)** No, **C)** It's allowed, but not required. The answer is: **A)** [WAC 296-46B-358(2)].

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ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 12 No. 2** **February 2009**

Three Electrical Inspectors Are Recognized For Excellence

"Electrical Inspector of the Year" and "Electrical Inspector Supervisor of the Year" awards were presented to three of our finest Labor and Industries electrical inspectors by Chief Electrical Inspector, Ron Fuller (left center) at the January 29th Electrical Board Meeting.

Dave Campbell (right center), was chosen as Labor and Industries Electrical Inspector of the Year. Jim Hinrichs (far right), and Steve Thornton (far left), will share the award for Electrical Inspector Supervisor of the Year. All three recipients are quick to point out that they would have no success if it weren't for the tremendous support and efforts from their inspectors and support staff.

Safety Tip of the Month!

Always purchase an electrical work permit before you start your electrical project.

Purchasing a permit ensures an electrical inspector will review your work for safety and code compliance.

Dave Campbell, Lead inspector in the Vancouver office, has worked for the department for over ten years. He is well respected by his peers and supervisors alike. He goes way beyond that which is required and is quick to volunteer for special projects and community outreach opportunities. Always a team player, Dave is well known for always being available to help out when help is needed.

Jim Hinrichs, the Everett office supervisor, has worked with the department for twenty-two years and is the senior supervisor. He piloted the highly successful SAFES program which paved the way for the E-CORE program (Electrical Compliance, Outreach, Regulation and Enforcement). Highly respected by his peers for his knowledge, experience, and tenacious spirit, Jim has dedicated his life to the pursuit of excellence in the electrical industry. Jim has been a role model in developing an extremely efficient and effective inspection workgroup. His accomplishments and desire to improve the electrical program are indisputable.

Steve Thornton, the Vancouver office supervisor, has worked for the department for over fourteen years. Steve is highly regarded by his staff and peers, and has a sterling reputation with his customers. When asked to describe Steve his fellow supervisors used terms like: knowledgeable, reasonable, great people skills, loves what he does. Like Jim, Steve's primary concern is the success of his inspectors, which is evidenced by their consistency and success in ensuring safe, compliant installations, and combating the underground economy.

The Correction Reduction Initiative Is Being Expanded

Corrections cost time and money for contractors and inspectors alike. The Correction Reduction Initiative was first introduced in June of 2006 with the goal of reducing the number of corrections written to contractors. All corrections indicate a problem with the work and require return trips to the jobsite for both the contractor and inspector.

In July, we identified and monitored a group that was consistently receiving the most corrections (i.e. 20% of contractors who received the most corrections per inspection and had at least 24 inspections in FY08.

The Correction Reduction Initiative has been very successful, resulting in much fewer corrections being written to the identified contractors. We are now going to expand the initiative and focus on all contractors who received at least twenty-four inspections in the twelve month period between July 1, 2007 and June 30, 2008, and who received more than the average number of corrections as compared to all other electrical contractors within the state. Electrical contractors within the group will receive an

ongoing monthly performance report, which is meant to help them keep track of how they are doing month to month, permit by permit.

Pop-up Receptacle Outlets For Residential Kitchen Countertops Must Be Listed

Receptacles serving dwelling unit countertops are required in kitchens, pantries, breakfast rooms, dining rooms, and similar areas. In the last few years "pop-up" receptacles have been appearing on the surface of residential kitchen countertops.

In addition to the listed GFCI protected receptacle, the fixture/box that houses the device must also be listed or the package must be listed as an assembly. If the unit is going to be installed in a kitchen countertop, the manufacturer's installation instructions must indicate it is suitable for this environment.

Third-Party Evaluation Is Required For Unlisted Electrical Equipment

In order to meet the minimum electrical safety standards for installations, all materials, devices, appliances, and equipment, not exempted in chapter 19.28 RCW, must conform to applicable electrical product standards recognized by the department, be listed, field evaluated, or in specific cases engineer reviewed. See WAC 296-46B-903(5) and (6) for eligible industrial utilization equipment and details of the engineering review process.

The electrical inspector can only approve equipment for use if it meets the one of the following third-party identification criteria:

- It arrives on the job site listed and identified with the certification mark of an L&I approved electrical products testing laboratory. The mark will identify the appropriate product category for the equipment. There may be listed individual components within the assembly but they are only a part of the product.
- Field evaluated with a field evaluation label applied by an L&I approved electrical testing lab.
- Engineer evaluated with the engineering evaluation label applied by an L&I approved engineer.

A third-party evaluator can have no organizational, managerial, financial, design, or promotional affiliation with manufacturers, suppliers, installers, or vendors of products covered under its certification or evaluation programs. Only laboratories or engineers approved by the department are allowed to perform field or engineering evaluations. "Approved" means the evaluator has met the requirements of WAC 296-46B, and is authorized by the department to evaluate electrical products that are installed in Washington. A list of approved evaluators can be found on our Web site at:
http://www.lni.wa.gov/TradesLicensing/Electrical/Install/default.asp

February 15th The Department Will Resume Normal Enforcement Of Tower Cranes

A voluntary compliance effort was initiated by the department for lack of third-party electrical evaluation and certification of tower cranes erected prior to December 15, 2008. This voluntary effort will extend through February 14, 2009. All tower cranes erected on or after December 15, 2008, are expected to carry the appropriate third-party electrical certification identification mark or evaluation label before they are put into operation.

Beginning February 15, 2009, L&I's Division of Occupational Safety and Health (DOSH) will resume normal enforcement when construction tower crane electrical components do not have the required third-party evaluation. If electrical components are not properly evaluated and certified, DOSH will issue citations with possible monetary penalties. In all cases where inspections are performed, if DOSH determines that there exists an imminent danger to workers or the public, immediate correction will be required prior to continuing operation.

Electrical Question of the Month

This Month's Question: Where EMT is installed on the roof of an office building for the purposes of supplying power to an HVAC heat pump, is an equipment grounding conductor required to be provided within the raceway? **A)** Yes, **B)** No, **C)** It's allowed, but not required.

Last Month's Question: In crawl spaces, can a nonmetallic sheathed cable with three No. 12 AWG conductors be run perpendicular to the direction of the joists, and be secured directly to the lower edges of the joists? **A)** Yes, **B)** No, **C)** Yes, if on running boards. The answer is: **A)** [WAC 296-46B-334(6)].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 12 No. 1** **January 2009**

The 2008 National Electrical Code Is Now In Effect

Beginning December 31st 2008, all new electrical permits are subject to the rules and requirements of the 2008 National Electrical Code (NEC). The 2008 NEC is adopted in the revised Washington Administrative Code (WAC) chapter 296-46B – Electrical Safety Standards, Administration, and Installation.

While these two documents are meant to work together to help electricians understand and interpret the requirements, they will sometimes conflict on a particular issue. It is important to remember that when there is a disagreement between the two standards, the WAC will always prevail over the NEC.

Printed copies of the revised WAC 296-46B can be purchased at any L&I office for $5.00 per document. Multiple copies can be ordered by calling the Electrical Program at (360) 902-5269. There is an Adobe .PDF format version of the new rules on our Web site for printing or downloading at: http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/LawsRules/default.asp

Safety Tip of the Month!

Portable heaters can help take the chill from areas of your home, but can be very dangerous if used improperly.

Approximately 1/3 of all house fires nationwide occur during the cold home season of December, January and February.

Stay warm and safe, and give space heaters clearance – at least 3 feet from anything that can burn, including little fingers!

New Cable and Conduit Clearances Under Metal-Corrugated Sheet Roof Decking

Roof decking material will often be repaired or replaced after the initial raceway or cabling system is installed. This can result in the penetration through the roof decking of screws or other mechanical devices designed to provide “hold down” strength of the waterproof membrane or roof insulating material.

NEC 300.4(E) has a new requirement all cables and raceways, except rigid and intermediate metal conduit, installed in exposed or concealed locations under metal-corrugated sheet roof decking be installed and supported so the nearest outside surface of the cable or raceway is not less than 38 mm (1½ in.) from the nearest surface of the roof decking.

Tower Cranes Are “Equipment” And Must Meet Electrical Safety Requirements

Crane failure due to mechanical or electrical problems can cause loss of life and significant property damage. Like other types of electrical equipment tower cranes must be listed or field evaluated. Washington’s electrical and worker safety laws and rules require third-party safety evaluation and labeling of all electrical equipment on tower cranes operating anywhere in the state.

When a state or a city electrical inspector finds a crane that has not had the third-party evaluation, they issue a correction notice to the crane installer requiring the safety evaluation to be done. Once a correction notice is issued, the owner of the crane must contact an accredited testing laboratory and make arrangements for the laboratory to field evaluate the equipment. Until the crane has the proper evaluation and label, the crane should not be used.

If the crane owner needs to operate the crane during the field evaluation process and the crane is in L&I’s electrical inspection jurisdiction, the owner may request permission to operate in writing to the Chief Electrical Inspector. L&I typically grants approval to operate on a temporary basis based upon the time needed for the laboratory to complete the field evaluation. If the crane is in a city’s electrical inspection jurisdiction, the owner must request permission from the city to energize any electrical equipment during the evaluation period. If the crane is in a city’s jurisdiction, it is up to the city to grant or not grant this approval.

For more information you should visit our “What’s New for Electrical Professionals” Web page which contains a link to the Tower Crane Electrical Safety Requirements:

http://www.lni.wa.gov/TradesLicensing/Electrical/WhatsNew/default.asp

Back-Fed Circuit Breakers Must Be Secured In Place With An Approved Device

Circuit breakers that are marked “Line” and “Load” have been evaluated only for the terminations marked. Circuit breakers without “Line” and “Load” markings have been evaluated for terminations in either direction and are suitable for back-feeding a panelboard.

If suitable, plug-in type circuit breakers or plug-in type main lug assemblies in a panelboard are allowed to be back-fed with field installed ungrounded supply conductors per NEC 408.36(D). These devices are required to be secured in place by an additional fastener that requires a method other than a pull to release the device from the mounting means on the panel.

Only listed fasteners that are approved by the panelboard manufacturer for that purpose will be allowed as the required additional fastener for back-fed devices.

2008 NEC Change Affects The Use Of Service Entrance Cable Type SE And USE In Interior Installations

For interior installations of SE or USE cables, Article 338.10(B)(4)(a) refers the installer to the requirements for nonmetallic sheathed cable (Article 334, Part II) in both the 2005 and 2008 NEC. In the 2005 NEC, the requirements in Part II (334.80) relating to the ampacity of the cable were exempted for SE and USE used inside a building. That exclusion of 334.80 is gone in the 2008 NEC. Investigation of the 2007 Committee Report on Proposals shows intent of the Code Making Panel (CMP) 7 to limit final derated ampacity of SE and USE cables used in interior installations to that of a 60 °C rated conductor, just like NM cable.

We have been asked for further clarification of this issue for use of service entrance cables under the unique conditions allowed in NEC 310.15(B)(6) and Table 310.15(B)(6). In this application the rating of the SE and USE conductors is increased to a higher ampacity based on the diversity of load on any service or feeder conductors carrying the full load of an individual dwelling unit, as limited in 310.15(B)(6). Loads on such conductors are considerably less than the load calculated per Article 220. No restrictions on these long established Table 310.15(B)(6) ratings were supported by CMP 6, the panel responsible for Article 310. We will not restrict these table ratings any further (for interior installation) under these specific conditions of use.

Electrical Corrections Issued Are Now More Recognizable and Descriptive

Along with the new NEC and WAC our inspectors have new mobile computer software that should add clarity to corrections written. During the 2005 NEC cycle the computer software limited the number of default (common) selections that were available to our inspectors when writing corrections. This meant inspectors had to add or edit corrections on the jobsite on a regular basis.

For the 2008 NEC we have increased the number of NEC and WAC references in the software. As a result the corrections you see written should look a lot like what you will see when you look them up in the Code or rules. The inspector still has some edit capabilities prior to printing the correction notice. This upgrade should make issued safety corrections easier to understand and reference.

Optional Standby Generator Circuits Must Utilize Required AFCI Breakers

Bedroom circuits that require arc-fault circuit interrupters may be fed from secondary power sources, as in the case of a multi-circuit transfer panel fed from a generator. Whether fed from the service panel, generator transfer panel, or another source, the circuit must be protected with the required AFCI. The AFCI must not be bypassed.

Electrical Question of the Month

This Month’s Question: In crawl spaces, can a nonmetallic sheathed cable with three No. 12 AWG conductors be run perpendicular to the direction of the joists, and be secured directly to the lower edges of the joists? **A)** Yes, **B)** No, **C)** Yes, if on running boards.

Last Month’s Question: What type of electrical permit is required for the replacement of a fuel dispenser at a gas station? **A)** Standard permit, **B)** Class B permit, **C)** Provisional permit, **D)** No permit is required because it is Class A basic electrical work.

The answer is: **A)** Standard permit [WAC 296-46B-901].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 11 No.12** **December 2008**

The 2008 NEC and WAC Effective December 31, 2008!!

Electrical permits purchased on or before December 30th 2008, will be inspected to the requirements of the 2005 NEC and the 2006 WAC 296-46B. Subsequent electrical inspections made for these projects will use those same standards. Permits purchased on, or after December 31, 2008, will be inspected to the requirements of the 2008 NEC and 2008 WAC 296-46B.

The coming WAC 296-46B version (in the Code Reviser format with strikethroughs and underlining to denote changes) can be viewed on our 2008 Electrical Rule Development webpage under "2008 DRAFT WAC Proposals", or at:
http://www.lni.wa.gov/TradesLicensing/Electrical/files/WACFY08DRAFT.pdf

Safety Tip of the Month!

This time of year, many of us will be hanging holiday lights on trees, gutters, windows, etc.

Before you plug in your lights or extension cords take the time to inspect them to make sure they are in good shape.

When you plug them in make sure you have good solid connections. If installed outdoors be sure to use GFCI protected outlets.

Have a safe holiday!

Temporary Electrician Permits For Out-Of-State Electricians

Electricians coming to Washington from another state may qualify for a temporary electrician permit. This permit would allow the individual to work as a certified electrician for 30 days. Temporary permits may be given to reciprocal applicants and to applicants from out-of-state who are applying for the examination.

To qualify for the temporary electrician permit an individual must submit an *Application for Electrical Examination or Reciprocal Electrician Certificate* at: http://www.lni.wa.gov/FormPub/Detail.asp?DocID=1895, pay application and temporary permit fees (See WAC 296-46B-909 for fees at: http://www.lni.wa.gov/TradesLicensing/Rules/files/electrical/500-039-222.pdf) and provide evidence that they meet the requirements of RCW 19.28.191. To expedite the processing of these types of applications, applicants should contact Electrical Licensing at (360) 902-5269, **before** coming to Washington to get details about what is acceptable evidence of experience.

The applicant should then complete the application, collect the necessary evidence, and send it by express mail to the Electrical Licensing Unit, Labor and Industries, PO Box 44460 Olympia WA 98504-4460 or 7273 Linderson Ways SW Tumwater WA 98501-4460 **before** moving to Washington. Waiting to do this until you have arrived in Washington may delay your ability to quickly go to work as an electrician.

2005 NEC Update Courses Will Expire December 31, 2008

Effective December 31, 2008, all 2005 National Electrical Code Update courses will be expired. Course sponsors must have updated their materials and received 2008 course numbers for any Code Update classes delivered after that date. If you take an expired class you will not get CEU credit, so make sure you verify your Code Update class is current prior to investing your time and money. During your certification renewal cycle, any Code Update course that was valid when you completed it will satisfy your renewal requirements. For example, a 2005 NEC-based Code Update course taken before December 31, 2008, would still meet your renewal requirements if you renew after December 31st.

Temporary Fee Reductions Will Expire December 31, 2008

On January 1, 2007, the department instituted a temporary fee reduction for electrical inspection and certification fees. Because of the strong construction economy at the time we were able to extend this 5% reduction an additional year through 2008. This temporary fee reduction will expire December 31, 2008. Effective with the new rules all electrical fees will return to their original 2006 values.

You Can Now Add Money To Your Electrical Permit Online

To expand our customer service, we have added online services. Like the original purchase of an electrical permit, you can now pay for additional services or fees due without having to physically come to an L&I office. Effective November 21, 2008, customers can pay fees on an existing permit through the Electronic Permits & Inspections System (EPIS). First, your local L&I office must add fees due or

additional service items to an existing permit. (For security reasons, you will still need to call your L&I customer service specialist to do data entry modifications of an existing permit.) Once the fee is added you can then pay it online. This is done in the "Request an Inspection" section of EPIS.

Information about this service is located at our Trades and Licensing Electrical webpage under "Purchase Permits & Request Inspections": http://www.lni.wa.gov/TradesLicensing/Electrical/FeePermInsp

● Flood Damaged Equipment Or Wiring Must Either Be Replaced Or Reconditioned

Many Washington residents have experienced the damage caused to electrical systems caused by flooding. "What should be done with this water damaged equipment? Does it need to be replaced? Am I allowed to dry it out, clean it and reinstall it, or is there something else I should do?"

The new rules provide specific guidance on flood damaged wiring and equipment per NEMA guidelines. WAC 296-46B-110(2) says that all breakers, fuses, controllers, receptacles, lighting switches/dimmers, electric heaters, and any sealed device/equipment (e.g., relays, contactors, etc.) submerged or exposed to water must be replaced. All other electrical equipment (e.g., wiring, breaker panelboards, disconnect switches, switchgear, motor control centers, boiler controls, HVAC/R equipment, electric motors, transformers, appliances, water heaters, and similar appliances) must be replaced or may be reconditioned by the original manufacturer, or by their approved representative.

● An Approved First Aid/CPR Course May Qualify For Industry Related CEUs

Since 2001 the department has allowed accredited first aid/CPR training courses to be applied toward the Industry Related category CEU's required for renewal of an electrician certificate of competency. Courses consisting of 2-, 4-, 6-, or 8-hour increments are allowed. In no case will first aid/CPR credit be given for less than 2 hours or more than 8 hours. Your course completion certificate (or instructor) must document hourly attendance in class. First aid/CPR classes do not meet the requirements for basic classroom electrical training (BC) credit for trainees.

● NEC 334.15(C) NM Sheathed Cable Protection Does Not Apply In Crawl Spaces

In crawl spaces only, where nonmetallic sheathed cable runs at an angle to the direction of joists, the requirements for smaller sizes of NM cable to be run either through bored holes in joists or on running boards does not apply (per WAC 296-46B-334(6)). In unfinished basements NEC 334.15(C) still applies.

● GFCIs Are Required For Dwelling Kitchens, But What If It's Not Quite A Kitchen?

NEC 210.8 requires ground fault circuit interrupter (GFCI) protection for personnel in a dwelling's kitchen where the receptacles are installed to serve the countertop surfaces. But what if the countertop is in an area that doesn't quite meet the definition of a kitchen?

The National Electrical Code defines "kitchen" in article 100. It says a kitchen is an area with a sink and permanent facilities for food preparation and cooking. The new rules further define "kitchen." WAC 296-46B-210(2)(a) says: "*For the purposes of NEC 210(8)(B), kitchen means any area where utensils, dishes, etc., are cleaned or where food or beverages are prepared or cooked*."

This means a wet bar or a dry bar (with no sink) and no permanent cooking facilities is now considered a kitchen, and GFCI protection is required for125-volt, 15- and 20-amp receptacles. Consider this new language when installing receptacle outlets in these spaces.

● Job Site Zip Codes Will Soon Be Required When Purchasing An Electrical Permit

Beginning in mid-January 2009 we will require zip codes for job site addresses on all electrical permits. This will improve the consistency and efficiency in delivering electrical inspection services.

● Electrical Question of the Month

This Month's Question: What type of electrical permit is required for the replacement of a fuel dispenser at a gas station? **A)** Standard permit, **B)** Class B permit, **C)** Provisional permit, **D)** No permit is required because it is Class A basic electrical work.

Last Month's Question: Electrical repairs or changes must be completed within how many days after corrections have been written and posted by the inspector?
A) 15, **B)** 30, **C)** 45, **D)** before permit expires. The answer is: **A) 15** [RCW 19.28.101]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 11 No. 11** **November 2008**

Important WAC Changes Are Featured In This Issue

The electrical rules, chapter 296-46B WAC, will modify and adopt the 2008 National Electrical Code (NEC) effective December 31st, 2008. This month we will concentrate on specific changes within the rules.

When the new version is printed, it will have approximately 18 fewer pages than the previous printing. The reduction is attributable to items formerly in our rules being incorporated into the NEC and to re-structuring of the rules into multiple sections A through F.

The new sections are intended to make it easier for other electrical inspection authorities having jurisdiction (AHJs) to adopt the mandatory technical portions of the rules into their municipal ordinances. The new sections are:

Part A – NEC installation amendments, standards, inspections, and definitions

Part B – Electrical plan review

Part C – Permits and fees

Part D – Provisional permits

Part E – Class B permits

Part F – Administrative

Requirements in the rules take precedence over the definitions and technical requirements within the NEC. If a conflict exists between the NEC and chapter 296-46B WAC, the WAC will prevail.

The 2008 DRAFT WAC Proposals are available for viewing on the Rule Development Web page at: http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/RuleDev/.

When the rules are adopted the final printed version will be at: http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/LawsRules/default.asp

Safety Tip of the Month!

With the temperatures dropping below freezing at night remember to leave yourself plenty of time to defrost your car's windows and mirrors before leaving.

Don't leave your driveway until you are able to see clearly!

Limitations On Arc-Fault Circuit Interrupter Protection (AFCI)

The 2008 NEC requires combination arc-fault circuit interrupters (AFCI) for virtually every room within a dwelling unit. Washington stakeholders have elected to maintain the 2005 NEC level of AFCI protected circuits. The rules will not require additional AFCI circuits beyond those for the bedrooms. The rules supersede the NEC as follows:

WAC 296-46B-210 Wiring and protection - Branch circuits. Arc-fault circuit-interrupter protection.
"(4) NEC 210.12(B) is amended to require AFCI protection only for dwelling unit bedroom spaces.
(a) Dwelling Unit Bedroom spaces include spaces that:
(i) Are used as the bedroom;
(ii) Are accessed only through the bedroom;
(iii) Are ancillary to the bedroom's function (e.g. closets, sitting areas, etc.);
(iv) Contain branch circuits that supply 125-volt, 15- and 20-ampere, outlets; and
(v) Are not bathrooms.
(b) If a new circuit(s) is added in an existing dwelling unit bedroom, an existing outlet(s) that is not connected to the new circuit(s) does not require arc-fault circuit interrupter protection if the outlet(s) was installed before December 1, 2005.
(c) If an existing circuit, installed before December 1, 2005, is extended, arc-fault circuit interrupter protection is not required.
(d) Arc-fault circuit interrupter protection is not required to be used for smoke or fire alarm outlets."

One-Line Diagram Of Feeders Is Required For The Inspection Of Most Large Jobs

A new requirement applies to non-dwelling systems that are over 600V or over 400A (any voltage). These non-dwelling electrical installations will now need to have a detailed one-line diagram available for

the electrical inspector at the initial inspection. The diagram must be signed and dated by the project owner (if they are doing the work) or the assigned administrator or master electrician of a contractor doing the work. The installation must not deviate from the plan. This requirement does not apply to plan reviewed jobs. Plan review approved plans are available for the inspector on those jobs.

WAC 296-46B-215 Wiring and protection — Feeders.

"(1) Other than plan review projects, the installer must provide a one-line diagram showing the service and feeder details for the project before the initial inspection can be approved for all non-dwelling services or feeders:

(a) Larger than 400 amperes; or

(b) Over 600 volts.

The diagram must be signed and dated by the project owner if the owner is doing the work or the assigned administrator or master electrician if an electrical contractor is doing the work. The diagram must show:

(c) All services including: wire size(s), wire type(s), service size(s) (e.g. voltage, phase, ampacity), overcurrent protection, available symmetrical fault current at the service point, equipment short-circuit rating, total load before and after demand factors have been applied including any demand factors used, and a panel schedule where multiple disconnecting devices are present; and

(d) All feeders including: wire size(s), wire type(s), feeder size(s) (e.g. voltage, phase, ampacity), overcurrent protection, total calculated load before and after demand factors have been applied including any demand factors used, and a panel schedule(s) where multiple disconnecting devices are present.

If the installer deviates, in any way, from the service/feeder design shown on the diagram, a supplemental diagram must be supplied to the inspector showing the most recent design before inspection can proceed. Load reductions and moving branch circuit locations within a panelboard do not require a supplemental diagram. Written documentation must also be provided to the inspector that the supplemental diagram was provided to the project owner."

● Alternate Energy One-Line Diagram Must Be Provided When Requesting Inspection

Just like the new requirements for submission of a one-line diagram for service and feeder, wind turbines and solar photovoltaic installers must now provide a detailed one-line when requesting an inspection.

WAC 296-46B-445 Wind Driven Generator Equipment

"(1) A wind driven generator system design review must be submitted at the time of the inspection request. Permit holders must submit a copy of the wind driven generator equipment manufacturer's installation information and a legible one-line diagram of the wind driven generator design and calculations used to determine voltage and current within the generation system to the electrical inspector. This diagram must show the wind driven generator equipment, devices, overcurrent protection, conductor sizing, grounding, ground fault protection if required, and any system interconnection points."

● Special Provisions For Receptacles Supplying Dwelling Unit Fire Alarm Systems

WAC 296-46B-210 Wiring and protection – Branch circuits.

"(1) In a garage or unfinished basement, a red receptacle, with a red cover plate, supplying a fire alarm system is not required to have ground-fault circuit-interrupter protection. The receptacle must be identified for use only with the fire alarm system by an identification plate or engraved cover with letters at least ¼" high."

● Electrical Question of the Month

This Month's Question: Electrical repairs or changes must be completed within how many days after corrections have been written and posted by the inspector? **A)** 15, **B)** 30, **C)** 60, **D)** before permit expires.

Last Month's Question: For a flexible cord supported pendant receptacle box, what is the maximum lateral displacement from a suitable strain-relief or tension take-up device to the permanent junction box that supplies the flexible cord? **A)** 2 feet, **B)** 4-1/2 feet, **C)** 6 feet, **D)** no limit. The answer is: **C)** [WAC 296-46B-314].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 11 No. 10** **October 2008**

Safety Tip of the Month!

Don't make the mistake of treating the grounded (neutral or white) conductor as if it's safe. Do not open it while energized. It is part a circuit under load and can cause shocks, injuries, and data loss, or damage equipment with sensitive electronic controls.

2008 NEC Inspector Training – No Inspections Will be Scheduled For November 5 and 6, 2008

There will be no electrical inspections scheduled in L&I jurisdiction on November 5th and 6th. To prepare for the December 31, 2008, adoption of the 2008 National Electrical Code (NEC) and electrical rules (WAC 296-46B), we will have all of our inspectors in two days of training in the Olympia area. The National Fire Protection Association (NFPA) has agreed to provide NEC training for L&I electrical code enforcement officials and all city electrical authorities having jurisdiction (AHJs) during this two-day presentation.

The NFPA publishes the National Electrical Code (officially know as publication: NFPA 70). NFPA is a commercial national provider of NEC training to all parts of the electrical industry. At the request of the provider, we must limit attendance to L&I and city electrical inspectors only.

Operation Of Equipment Undergoing Field Evaluation Or Engineering Evaluation

When necessary, to expedite the installation of un-listed equipment that is being evaluated for electrical safety, the electrical rules allow the equipment to be temporarily energized during the evaluation process. This is only allowed if there is a formal field or engineering evaluation in progress. A field evaluation firm must have an approved request to do the evaluation. An engineering evaluation firm must have notified L&I that they are reviewing the equipment.

The request to operate such equipment (per WAC 296-46B-901(20)) must come directly from the **equipment owner (end-user)**, not the electrical contractor, equipment manufacturer, distributor, or vendor. The request must document the (L&I issued) field evaluation number or contract with the approved engineering firm to verify safety evaluation is actively in process. For each item to be energized the request must clearly identify the equipment manufacturer, model #, serial #, electrical ratings, equipment location, and the specific number of days requested for temporary operation.

Supervision Of Individuals With Training Certificates

All individuals with a standard (E1) training certificate must be supervised while performing electrical work.

When the electrical work is in the scope of the 03A, 06B, 07A, 07B, 07C, 07D, 07E, or 10 certification limits, the individual must be supervised 100% of the time until they get the minimum 720 or 1000 hours of experience and **pass** their examination. When working exclusively in their specialty, they may work the remaining hours (1280 or 1000, but not more than two years) with a 0% supervision (E2) training certificate until they qualify for full certification.

Trainees performing all other types of electrical work must be supervised 75% of the time **on each jobsite**. There is a frequent misinterpretation that electrical trainees are allowed to work 2 hours (25%) anywhere without supervision each day and then go to a jobsite where supervision is provided. The Electrical Board has previously ruled on this issue and determined that trainees on a jobsite for only one hour must have their supervising electrician(s) on the same site not less than 45 minutes.

There is an unsupervised (E1) training certificate available for individuals in the last six months of an approved (01) journeyman electrical construction trade apprenticeship or training school. They must claim not more than 4000 combined hours of specialty experience and not less than 3000 hours of (01) journeyman experience supervised in a one-to-one ratio. The special certificate is issued one-time, for one six-month period to qualified individuals. Specific details of are in WAC 296-46B-965(13).

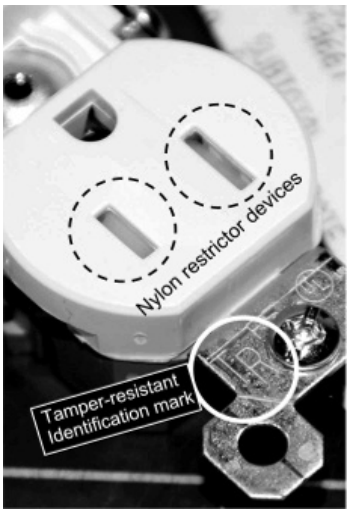
WAC 296-46B-965(15) makes provision for one additional unsupervised trainee status in a very specific situation. It states, "*Electrical trainees may work unsupervised when installing HVAC/R thermostat cable when the HVAC/R system consists of a single thermostat in one- and two-family dwelling units where line voltage power has not been connected to the dwelling's electrical system.*" Individuals working in this

unsupervised status are not making any advancement in their electrical careers. The unsupervised experience will never be applicable to qualification for electrical certification exams.

More On Changes Coming With The 2008 NEC

The public hearings on chapter 296-46B WAC revision proposals are completed and all comments have been received. We are still on track for adoption of the 2008 NEC on December 31, 2008. The purchase date of the electrical work permit will determine which version of the Code will be enforced. If you want to have the 2005 NEC applied to your installation, then you must **purchase the permit on or before the effective date of the new rules** (December 31, 2008). For plan reviewed jobs, the determining date for the design (and therefore the installation) is the **date the plans are received and accepted for review**.

New in the 2008 NEC – Article 406.11 Tamper-Resistant Receptacles in Dwelling Units



We believe the changes in this article will have the largest economic impact on many industry stakeholders. It was mentioned last month, but worth further discussion. This type of device will be required for all 125-volt, 15- and 20- ampere receptacles installed in all dwelling unit locations covered in NEC 210.52. Built in restriction devices prevent a single object from being inserted in the grounded or ungrounded conductor receptacle slots. The restriction devices allow the simultaneous insertion of objects into both slots (like a two-bladed, ungrounded male lamp plug). The illustration shows both the nylon restrictors and the distinctive "TR" identification stamped into the metal strap.

Manufacturer's representatives stated to the Technical Advisory Committee and Electrical Board that distributors will cooperate with their contractor customers in return and exchange of old stock. They claim to have adequate stock of new weather-resistant and GFCI versions of these tamper-resistant devices as well. These will also have distinctive markings in addition to the "TR." Non-tamper-resistant receptacle stock may still be used in many non-dwelling unit locations.

New in the 2008 NEC – Article 210.4 Multiwire Branch Circuits-(B) Disconnecting Means and (D) Grouping

This article now states in subsection (B), "*Each multiwire branch circuit shall be provided with a means that will simultaneously disconnect all ungrounded conductors at the point where the branch circuit originates.*" This can be accomplished with multi-pole overcurrent devices or listed handle ties on single-pole devices.

Circuit designers (contractors, engineers, electricians) using multiwire branch circuits in office environments will be faced with losing the ability to disconnect (or isolate faults in) the individual circuits. To maintain this type of separation previously allowed under the 2005 NEC, individual branch circuits must be installed. If you want individual circuit separation, this means additional grounded circuit conductors, raceway space, and potential conductor de-rating (for fill) must be considered in your designs.

A new subsection (D) added to this article requires, "*The ungrounded and grounded conductors of each multiwire branch circuit shall be grouped by wire ties or similar means in at least one location within the panelboard or other point of origination.*" There are exceptions for conductors in raceways unique to the multiwire circuit or cable assemblies that make the grouping obvious.

Electrical Question of the Month

This Month's Question: For a flexible cord supported pendant receptacle box, what is the maximum lateral displacement from a suitable strain-relief or tension take-up device to the permanent junction box that supplies the flexible cord? **A)** 2 feet, **B)** 4½ feet, **C)** 6 feet, **D)** no limit.

Last Month's Question: The maximum overcurrent protective device that can be used to protect conductors enclosed in 1/2" liquid tight flexible metal conduit, while still permitting the flex to be used as the equipment grounding conductor is _____ amperes or less. **A)** 20, **B)** 30, **C)** 60, **D)** 80. **The answer is A)** 20 [NEC 250.118(6)].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 11 No. 9** **September 2008**

Public Hearings Scheduled For Rule Revisions

Public hearings for the 2008 electrical rule revisions (chapter 296-46B WAC) have been scheduled. The hearings are:

Tukwila – September 23, 2008, 10 a.m., Labor and Industries Tukwila Service Location, 12806 Gateway Drive.

Spokane – September 25, 2008, 2 p.m., Labor and Industries Spokane Service Location, 901 N. Monroe Street, Suite 100.

Tumwater – September 29, 2008, 9 a.m., Department of Labor and Industries Building, 7273 Linderson Way SW, Room S117.

The current proposed rule can be viewed at:
http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/RuleDev/default.asp

If you cannot attend a hearing, you can make written comments (must be received by L&I before 5:00 p.m., September 29, 2008) to: Chief Electrical Inspector, Department of Labor and Industries by:

- Mail to: PO Box 44460, Olympia WA 98504-4460
- Fax to: 360-902-5595; or
- E-mailto: ElectricalProgram@LNI.WA.GOV

Safety Tip of the Month!

Driving in the rain – Prevent skids by driving slowly and carefully, especially on curves. Steer and brake with a light touch. When you need to stop or slow, do not brake hard or lock the wheels and risk a skid. Maintain mild pressure on the brake pedal.

A defensive driver adjusts his or her speed to the wet road conditions in time to avoid having to use any of these measures!

Changes Coming in the 2008 NEC and WAC

Beginning this month, we will publish monthly articles on important NEC and rule changes that will be effective when the WAC is effective on December 31st.

New in the 2008 NEC – Receptacle and Cover Requirements

Beginning December 31st, the NEC is requiring two significant changes for receptacles and their covers. There will be no extension or delayed implementation for either of these new requirements. If you have existing stock, it must not be used in the locations where the new requirements apply. There will be no extension or delay of implementation for either of these requirements.

First – NEC 406.8(A) and (B) will require all 125 volt, 15- and 20-ampere nonlocking receptacles, installed in either a damp or wet location, to be a listed weather resistant type receptacle. There is no exception for this requirement including installing a weather resistant cover.

Second – NEC 406.11 will require listed tamper-resistant receptacles in all areas specified in NEC 210.52 (i.e. dwelling unit receptacles) for all 125 volt, 15- and 20-ampere receptacles.

Plug-in Household Appliances

Legislation that passed in 2002 modified the definition of "equipment" in RCW 19.28.100. The 2002 legislation changed the requirements for wiring plug-in appliances. This article supersedes an article about the wiring of appliances in the October 2001, *Electrical Currents* newsletter.

RCW 19.28.010 requires "*All wires and equipment and installations thereof…*" within the scope of the statute to conform to the licensing, permitting, inspection, and installation standards within the statute. RCW 19.28.006(9) says, "*"Equipment" means any equipment or apparatus that directly uses, conducts, insulates, or is operated by electricity but does not mean: Plug-in appliances;* ***or*** *plug-in equipment as determined by the department by rule.*" (bold added for emphasis)

RCW 19.28.006(9) exempts plug-in appliances from all the requirements of chapter 19.28 RCW (e.g. licensing, certification, permitting, inspection, etc.). For this exemption, appliances are limited, by the definition in WAC 296-46B-100(7), to household appliances. For any other appliance, all the requirements of chapter 19.28 RCW apply (e.g. licensing, certification, permitting, inspection, etc.).

WAC 296-46B-925(10) allows the installation of plug and cord equipment where *"...the plug and cord are a single listed unit consisting of a molded plug and cord and not exceeding 250 volt 60 ampere single phase. The plug and cord can be field installed per the manufacturer's instructions and the product listing requirements. The utilization equipment must be a single manufactured unit that does not require any electrical field assembly except for the installation of the plug and cord."*

This exemption is specific to the first time, new, installation of the equipment and does not include replacing, repairing, servicing, or maintaining the plug and cord equipment or any exception from permitting and inspection requirements. Any company or individual that is replacing, repairing, servicing, or maintaining the plug and cord equipment must meet the requirements for contractor licensing, electrician certification, permitting, and inspection. This means that an appropriate contractor license and electrician certification along with appropriate permitting and inspection is necessary when replacing, repairing, servicing, or maintaining the plug and cord equipment.

Stakeholders have made WAC revision proposals to add "service, maintenance, and repair" to the WAC 296-46B-925(10) exemption. The Technical Advisory Committee, Electrical Board, and L&I have declined to accept the proposal to expand the exemption. Service, maintenance, and repair were intentionally excluded from the WAC exemption because of the increased safety risk to the electrical worker and customer once an electrical system has been energized.

However, RCW 19.28 does not regulate (e.g. licensing, certification, permits, etc.) repair work done in an appliance repair shop. In this business environment appropriate supervision, quality control, and safety is the exclusive responsibility of the shop owner. Field work is limited to plugging the cord into an existing electrical receptacle. Electrician certification or contractor licensing is not required to unload a household appliance from a truck and plug it in to a compatible existing electrical receptacle.

● Temporary Plug and Cord Wiring – Carnivals, Fairs, Concerts, Trade Shows and Similar Events

Wiring a temporary power distribution system, using plug and cord wiring methods, is not exempt work even if the power source is from a permanently installed electrical receptacle. A permit and inspection is required for any type of temporary power distribution system that uses generators, dimmers, transformers, feeders, branch circuits, or other means that distribute power to electrical equipment (e.g. amplifiers, lights, etc.). A distribution system means the interconnecting wiring, spider boxes, or other equipment that is installed to distribute power to the end user (e.g. booth operator, vender, etc.) for plugging in their equipment.

If the plug and cord system and equipment are owned by the installer (e.g. show operator, road crew, etc.), the installer is considered to be an owner and is exempted from the requirements for electrical contractor licensing and certification by RCW 19.28.261(1) so long as: the installer has approval from the property owner to make the electrical installation and there is no hard wiring involved in the system. When these conditions are met, the plug and cord electrical distribution system is the "place of business" for the system/equipment owner or firm.

● Labor And Industries Electrical Work Permits And Inspection Fees

An inaccurate description of electrical work performed on an electrical permit obtained online or in person can cause delays in your electrical project. A valid electrical permit must include a detailed description of the work performed and inspection fees paid. Training materials and fee calculation worksheets have been posted and available on our Web site for the last eight years. You can find these documents at:

http://www.lni.wa.gov/TradesLicensing/Electrical/FeePermInsp/PermitInspect/Fees.asp

● Electrical Question of the Month

This Month's Question: The maximum overcurrent protective device that can be used to protect conductors enclosed in 1/2" liquid tight flexible metal conduit, while still permitting the flex to be used as the equipment grounding conductor is _____ amperes or less. **A)** 20, **B)** 30, **C)** 60, **D)** 80.

Last Month's Question: The Department of Labor and Industries with electrical industry stakeholder input may change the duties of the electrical administrator by following the formal WAC development process in the Administrative Procedure Act (Chapter 34.05 RCW). False, only the legislature can change the RCW. The department has the responsibility to create rules (with stakeholder and Technical Advisory Committee input), but the rules can not require anything that is not authorized in the statute.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 11 No. 8** **August 2008**

Contractors Receiving Improper Corrections

Contractors that received the latest Correction Reduction Initiative letter called us to say they were issued corrections in error. Some said the corrections they received should have been issued to the business or property owner. Some believe they received invalid corrections from the inspector.

Contractors, who believe they have received improper corrections, should contact the Electrical Inspection Field Supervisor for the issuing office to discuss possible removal of invalid corrections from their records.

Safety Tip of the Month!

Test equipment allows us to know the energized status of electrical systems. Keep yours in good repair and check it often with a known source of power. Your life may depend on it.

We use this initiative to improve our own performance as inspectors. A contractor should never accept invalid corrections because they fear reprisal from an inspector or supervisor.

Our inspectors are required to provide an accurate reference (NEC, WAC) for all corrections issued. Improper corrections will be removed from the contractor's records. If you feel you received inappropriate treatment from an electrical inspector, the local Electrical Inspection Field Supervisor and Regional Administrator need to be made aware of your situation.

Change Of Electrical Inspection Responsibility For The City Of Marysville

Labor and Industries was informed at the end of July that the City of Marysville will be taking responsibility for all electrical inspections within their jurisdiction on **September 15, 2008**. Permits and electrical inspections for electrical installations done within the City of Marysville must be obtained directly from the city offices. Please contact the city for permit requirements and information.

The City of Marysville web site is: http://ci.marysville.wa.us/

Do not buy your electrical permits from a Labor and Industries field office or from our online permitting system for work done in the city limits of Marysville after September 15, 2008. Labor and Industries will continue to perform inspections on electrical permits already in progress or those purchased prior to September 15th. Refunds are not allowed on any permit that has had an inspection.

WAC Revision Proposals Reviewed By The Electrical Board

At the regular, July 31, 2008, quarterly meeting the Electrical Board reviewed the WAC revision work of the department and Technical Advisory Committee. Their recommendations will be considered and the resulting WAC revisions will be presented at public hearings in Tumwater, Tukwila, and Spokane in late September. The exact times, dates, and locations will be in the September issue of this newsletter and announced first on the Electrical Listserv (a free subscription to this monthly newsletter and other electrical industry announcements available at: http://www.lni.wa.gov/Main/Listservs/Electrical.asp).

Starting with the September edition of this newsletter, we will include articles on 2008 NEC changes that will have economic impact on our stakeholders. We will continue with these and WAC revision preview articles each month until the effective date (target: December 31, 2008) of the 2008 NEC and revised chapter 296-46B WAC.

Rating Of The Feeder Disconnect At A Separate Building Or Structure

Two Code Making Panels (CMP) are responsible for the NEC articles relating to feeders. Article 215 (under CMP 2) determines the ampacity and overcurrent protection of all feeders. Article 225 (under CMP 4) addresses equipment ratings and physical characteristics of wiring at a separate building. The two panels avoid covering issues outside of their specific scope and responsibilities. Substantial revisions to these articles happened in the 1999 Code cycle. Study of the Committee Reports on Proposals (ROP) and Reports on Comments (ROC) published since that time reveals little about the specific "intent" of CMP actions.

In 2004 (for the 2005 NEC) CMP 2 rejected a proposal to add the following to Article 215-2(A)(5): "*The rating of panelboards and similar devices at which feeder conductors terminate, shall not exceed the feeder conductors ampacities.*" Their rejection statement stated: "*Larger ampere panelboards are often used in installations to gain the number of circuit spaces required by the design.*"

As recently as 2007 (for the 2008 NEC) CMP 4 has rejected proposals to clarify whether the minimum disconnect ratings in Article 225.39 "*applies to the rating of the disconnect or does this mean that the minimum size of a feeder to a building should be 60 amperes.*" CMP 4 responded to such proposals with statements like "*The title of 225.39 defines the requirement as solely being the rating of the disconnect*" and "*Future expansion has nothing to do with this requirement.*"

Until CMP 2 and CMP 4 do a better job of clarification, we will not make assumptions about their intent. For consistency, we will enforce exactly what each article says. Article 215.2 (and 220) will be used to determine the feeder conductor ampacity and overcurrent protection based on the calculated loads at a separate building. Article 225.39 will be used to determine the minimum rating of the separate building's disconnecting means.

Under the right combination of load calculation and number/type of circuits, it is possible to have a 30 ampere feeder terminate on a 60 ampere (or larger) disconnecting means at a separate building. This can create an unsafe condition if an unqualified individual reads only the circuit breaker marking and assumes there is more capacity for expansion than actually exists. At this time a mismatch of conductor ampacity and equipment rating needs an identification plate only on services, per WAC 296-46B-230(6). In this situation, we hope that quality contractors will do this identification voluntarily.

● Access To Inspect Installations Of Elevated Electrical Equipment

Increasing numbers of alternative energy source installations (and similar situations) have prompted this reminder. Inspection is required for the electrical work (solar panels, conduits, etc.) on the steep, snowy roof pictured to the right.

The contractor that performs any electrical installation requiring bucket or ladder trucks, scaffolding, special ladders, or other such equipment must make that equipment available to conduct the electrical inspection. Getting inspections completed is a required part of the overall installation responsibilities of the contractor and administrator. The contractor should make prior arrangements with the electrical inspector to provide access to conduct these inspections.

The department's inspectors will make every possible effort to accommodate the electrical contractor's schedule and be there while the equipment (and the contractor's safety system) is in place.

Electrical inspectors are exposed to various jobsite hazards daily while performing their job duties. The department takes the welfare of its employees very seriously. We provide our employees with appropriate personal protective equipment (PPE) and training for the situations an inspector is expected to encounter while doing inspections. We have the ability to utilize the contractor's legal safety system.

● Electrical Question of the Month

This Month's Question: The Department of Labor and Industries with electrical industry stakeholder input may change the duties of the electrical administrator by following the formal WAC development process in the Administrative Procedure Act (chapter 34.05 RCW). True or False?

Last Month's Question: What is the maximum rating for an inverse time circuit breaker used to provide motor branch-circuit short-circuit and ground-fault protection for a residential 240 VAC, single-phase, ¾ horsepower well pump motor, controller, and branch-circuit? **A)** 30 amps, **B)** 25 amps, **C)** 20 amps, **D)** 15 amps.

The answer is: C) The motor full load current is 6.9 amps (NEC Table 430.248) multiplied by the percentage of motor full load current for an inverse time circuit breaker (250% from NEC Table 430.52) which equals 17.25 amps. The next highest standard OCPD (NEC 430.52, Exception No. 1) is 20 amps.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 11 No. 7** **July 2008**

Safety Tip of the Month!

When working on energized equipment identify what hazards exist and wear the appropriate protective equipment.

Arc flash can seriously hurt or kill you!

Correction Reduction Initiative Update

The Correction Reduction Initiative for Fiscal Year 2008 ended June 30th. We monitored two groups:

- The 5% of contractors that got the most corrections per inspection; and
- The 5% of contractors that got the highest total number of corrections.

Both groups improved significantly the quality of their work resulting in about 8,000 fewer corrections. Improvement in the quality of a contractor's work saves the contractor and L&I time and money.

Next fiscal year's initiative will have a new group of contractors. We will be focusing on improving the work of the contractors who are getting the most corrections per inspection. The group will be the 20% of contractors who get the most corrections per inspection and had at least 24 inspections in the past year. These contractors get over two times the number of corrections per inspection more than the average electrical contractor. This 20% group gets only 15% of the electrical inspections, but it receives 32% of all corrections issued statewide.

All corrections indicate a problem with the work and create unnecessary return trips to jobsites to re-inspect. Contractors and their administrators are responsible for: supervising and training their employees, the quality of their installation work, and conformance with the mandatory installation safety standards. All contractors should concentrate on getting no corrections. Corrections cost time and money. We have had some contractors tell us they use our corrections to train their electricians and trainees. Using inspections as a training tool is wrong.

We will be more proactive this year in helping the new group improve their installation work. The goal for this year is to reduce their number of corrections per inspection by 40%. If this goal is met, the group will be almost down to the statewide average for corrections.

2008 Spring Inspector Training Sessions Were Successful

The Labor and Industries Electrical staff provided 16 hours of technical training to over 400 state and city electrical inspectors and supervisors, administrators, electricians, and trainees during the March, April, and May classes held in Kent. We received positive feedback from the participants about the training format and content of the training.

When possible, we will continue to invite city inspection jurisdictions, contractors, electricians, and trainees to attend our technical trainings on a space available basis. The recent classes were filled in two days (over the weekend) after a Friday announcement. If training opportunities are announced, we recommend you respond immediately. We always announce available training on the Electrical Listserv first. You can join this electronic mailing list at:

http://www.lni.wa.gov/Main/Listservs/Electrical.asp

Through the mailing list, you will receive electronic copies of this newsletter and links to other regulatory items that are useful to those working in our state's electrical industry. These automatic E-mailings are sent out only when something of importance is posted on our website.

"Within Sight"

The NEC uses "in sight from, within sight from, and within sight" to mean visible and not more than 50 feet from one object and another. The 50 foot distance is the direct distance between two objects. The 50 foot distance is not the maximum distance traveled to go from one object to another.

Unlike maintenance disconnects, the location of emergency disconnecting means or emergency disconnect controls (e.g. fuel dispensers, commercial spas) are typically located subject to approval by

the AHJ. In such cases NEC required distances are sometimes associated with the maximum travel distance, not just visibility.

● Approved Electrical Construction Trade Apprenticeships And Training Programs

The feedback we received on June's Question of the Month (and answer below) indicated that we need to make training certificate requirements clear. RCW 19.28.161(2) states "*All apprentices and individuals learning the electrical construction trade shall obtain an electrical training certificate from the department. The certificate shall authorize the holder to learn the electrical construction trade while under the direct supervision of a master journeyman electrician, journeyman electrician, master specialty electrician working in that electrician's specialty, or specialty electrician working in that electrician's specialty. The holder of the electrical training certificate shall renew the certificate biennially*." All electrical apprenticeships and approved electrical construction trade training programs involve hands-on field electrical work, internships, externships, shared work experience, and even electrical contracting work by some training programs. Individuals working without proper training certification are subject to citation.

Obtaining an electrical training certificate is the first step in becoming an electrician. Establishing your personal training records with L&I and participating in the regulatory program is an essential part of the electrical training process. The training certificate must be in your possession when you begin an apprenticeship or training program, not after the classroom work is done.

Since many appear to be unaware of this requirement, we will begin contacting the approved apprenticeships and training programs in the coming months. Apprentices have always been required to hold current training certificates. If you do not have a current training certificate and are currently in an approved electrical construction trade training program you must obtain (or renew) your electrical training certificate immediately. You cannot receive credit towards examination without holding a valid training certificate.

● L&I Employment Opportunities For Experienced (01) Journeyman Electricians

The Electrical Program's primary mission is to "Keep Washington's Safe." We ensure electrical professionals working in Washington are adequately trained licensed, and certified to do safe and compliant electrical work. We are seeking experienced and certified journeyman electricians who are interested in becoming inspectors. The electrical (inspection) program is required to only hire workers with specific installation experience requirements. We anticipate a large number of retirements in the coming years. If you want to work for a quality employer with good pay and benefits, you should put in your application. For more information about employment opportunities at L&I, visit our website at: http://www.lni.wa.gov/Main/FindAJob/bulletins/08146.asp and/or Join the L&I personnel division listserv to receive L&I job announcements: http://www.LNI.wa.gov/Main/Listservs/LNIJobs.asp. If you have questions, please contact, Phyllis Gallegos at (360) 902-5709 or by email at Galr235@lni.wa.gov.

● Correction To The October 2007 ELECTRICAL CURRENTS Newsletter

This issue was devoted almost exclusively to the Appliance Repair (07D) specialty and was intended to address issues specific to that specialty and defining the scope-of-work. In the article titled "*Just What Is An Appliance?*" the included table should have been properly headed with "Examples of Residential, Commercial, or Small Industrial Appliances and Utilization Equipment." This table only describes equipment within the scope of work of the 07D specialty and **should not** be used to conclude that a self-contained hot tub is a "household appliance" and Class A electrical work exempt from inspection.

● Electrical Question of the Month

This Month's Question: What is the maximum rating for an inverse time circuit breaker used to provide motor branch-circuit short-circuit and ground-fault protection for a residential 240 VAC, single-phase, ¾ horsepower well pump motor, controller, and branch-circuit?
A) 30 amps, **B)** 25 amps, **C)** 20 amps, **D)** 15 amps.

June's Question: Individuals learning the electrical construction and maintenance trade (under the requirements of electrical contractor licensing and electrician certification), must have a current electrical training certificate: **A)** only when they are enrolled in a formal apprenticeship program [under RCW 49.04], **B)** constantly while enrolled in an approved electrical training program, **C)** only when working in the field for an electrical contractor, **D)** only after completion of the electrical training program, before they apply to get credit for the school. **Answer is: B)**. [RCW 19.28.161(2)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 11 No. 6** **June 2008**

Safety Tip of the Month!

Stand clear when operating any electrical overcurrent device (even behind a cover). Devices fail, short circuits occur, and such failures may result in arc flash injuries.

● CPSC Counterfeit Circuit Breakers Alert!

The Consumer Product Safety Commission has announced a recall of counterfeit circuit breakers labeled as Square D. About 371,000 units were distributed by Specialty Lamp International Inc., of Deerfield Beach, FL, from May 2005 through June 2006.

Actual Square D circuit breakers have: (a) the amp rating written on the handle in white paint on the front of the breaker (*authentic Square D circuit breakers manufactured prior to 2003 did not have white paint on the amperage numbers*); (b) the Square D insignia molded onto the breaker side: and (c) a yellow chromate mounting clip with half of the top of the clip visible. If your breaker, labeled as Square D, does not match this description, it could be counterfeit.

For additional information, contact Specialty Lamp at (866) 650-3076 between 8 a.m. and 5 p.m. ET, by email mailto:bart@specialty-lamp.com, or visit the company's Web site at www.ebulb.net.

● Identifying Disconnecting Means For Septic Pumps And Their Controllers.

Many simple residential septic pumping systems are being installed with a single-pole disconnect switch upstream from a listed indoor/outdoor alarm enclosure that serves as a junction (and testing) point for the motor and alarm circuits. When "within sight" of the motor or controller location (i.e. the servicing access hatch to the pump motor and pump controller/float switch), this will satisfy the requirements of NEC 430.102(A) and (B). This configuration "appears" to disconnect everything downstream, but many installers opt to feed the alarm and high-level alarm float switch from a separate power source. Typically the required disconnect identification plate (NEC 110.22 and WAC 296-46B-110(3)) is minimal and says "SEPTIC", "PUMP", "SEPTIC SYSTEM", "SEPTIC DISCONNECT" or something equally non-specific. If there are two power sources, this creates a potentially dangerous exposure to an individual performing repair or maintenance on the system.

If the disconnect switch (single- or two-pole) actually de-energizes all circuits associated with the system, then abbreviated labeling is adequate. If it does not, then the identification plates must be detailed enough to identify that only the pump motor and controller/float switch are disconnected **and** the alarm circuit and its float switch are powered from a separate source.

● Free Recycling For Mercury Thermostats

The Washington State Department of Ecology (Ecology) is offering a free recycling program for mercury thermostats. Electrical contractors who remove old mercury "t-stats" can join a free program to help to keep mercury out of the environment. Each of these devices can contain between three and five grams of mercury.

Mercury is very toxic and a big problem once it gets into the environment. While sealed metallic mercury is fairly safe to deal with, mercury vaporizes, even at room temperature, and the vapor is toxic to breathe. Children and fetuses are especially vulnerable to the effects of mercury. It can damage the brain and nervous system, as well as kidneys and other organs.

The good news is that Ecology and thermostat manufacturers are picking up all costs for a new mercury thermostat recycling program. They are asking electrical contractors to join in the effort to keep mercury t-stats out of the trash and out of the environment. Here's how it works: Ecology will get you set up with a free recycling bin. Electricians in a shop collect old mercury t-stats whenever they do a change-out or upgrade. When they return to the shop, they place the **entire unit** in the bin. When the bin is full, tape it shut, slap on the label, and it goes out the door with the shipping pre-paid and a new bin is sent to you free of charge.

To sign your business up for this program, or for a list of current mercury thermostat recycling sites, contact Michael Bergman at Ecology: 360.407.6243; mber461@ecy.wa.gov.

Cautions About Installing Your Own "Green" Power Source

As fossil fuel costs rise and we learn more about global climate change possibilities, we are hearing the term "green" power from many sources. Many individuals want to participate in solutions and even have the option of voluntarily contributing to "green" power sources via their utility bill payments. Consumers should be cautious in their decisions if considering the purchase their own "green" power production equipment.

Electric utilities need two types of power - one for base load, the other for peak loads. The solar and wind driven systems (alternatives to nuclear, hydroelectric, and fossil fuel burning generators) are not continuous and often vary inversely with grid power needs.

Grid-tied solar power production systems and equipment on private property have a long history of successful use supplying small-scale base load in the US and many European countries. Nearly all of this equipment available in the US has been properly tested for electrical safety and been listed by electrical product testing laboratories. Investment payback time claims vary by manufacturer, but cost-per-watt of capacity continues to decrease as solar panel manufacturing processes improve.

Consumer-owned small wind turbine generating equipment is a relatively new industry and some manufacturers have not had their equipment tested and listed by electrical product testing laboratories or engineer review. They are placing the responsibility on their customers to have the equipment evaluated for safety, a practice that most electrical equipment manufacturers avoid. Typically, only one-of-a-kind equipment requires the level of inspection being required of customers with these unapproved wind turbine installations.

For the protection of utility line workers, neither wind nor solar grid-tied power systems are capable of supplying power to the property when utility power fails.

At this time, "green" power is very expensive when compared to other generating sources. The most effective energy saving measures are often the simple, not so obvious, changes people can make like: replacing incandescent bulbs with energy efficient bulbs, turning down the thermostat and turning off the light when nobody is in the room.

Lightning Protection Systems

To install Lightning Protection Systems (LPS) without being a licensed electrical contractor, you must be a registered general contractor under chapter 18.27 RCW. If you are not a licensed (01) electrical contractor, the only electrical equipment or conductors you may install are the conductors detailed in *NFPA 780 – Standard for the installation of Lightning Protection Systems*. You may make the required (NEC 250.106) inter-system bonding connections to building structural steel, reinforcing steel in concrete encased electrodes, metallic piping systems, and premises made electrodes of rods, pipes or plates.

You may not install any of the required components of the premises grounding electrode system or terminate the LPS conductors on any electrical system equipment enclosures, boxes, or raceways. You may not terminate the LPS conductors on the premises grounding electrode conductor. Any termination of lightning protection system conductors on a premises grounding electrode conductor must be done by an electrical contractor. The electrical contractor doing the termination work is responsible for permitting and inspection of this connection. Other than the connection to the premises grounding electrode system, electrical work permits and electrical inspection will not be required for the installation of NFPA 780 Lightning Protection Systems.

Electrical Question of the Month

This Month's Question: Individuals learning the electrical construction and maintenance trade (under the requirements of electrical contractor licensing and electrician certification), must have a current electrical training certificate: **A)** only when they are enrolled in a formal apprenticeship program [under RCW 49.04], **B)** constantly while enrolled in an approved electrical training program, **C)** only when working in the field for an electrical contractor, **D)** only after completion of the electrical training program, before they apply to get credit for the school.

May's Question: A medical device approved under US Public Law No. 94-295, 90 Stat. 539:
A) is exempt from inspection of the supply circuit, **B)** is required to be listed, **C)** is compliant with state electrical laws (RCW 19.28), **D)** must be serviced by a certified electrician.
Answer is: C) [RCW 19.28.371]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 11 No. 5** **May 2008**

Safety Tip of the Month!

Before using, do thorough visual checks of the condition of a ladder or scaffold. Don't put yourself at risk of injury by using defective or damaged equipment.

Upcoming Electrical Stakeholders Meetings

Stakeholder meetings will run through June 2008 at the locations listed below. It is important for you to stay up to date with changes that might affect you. You have an opportunity to get your questions answered and give the Electrical Program your valued input when you attend a stakeholder meeting. Please join us at 6:00 p.m., at one of the remaining stakeholder meetings near you.

2008 Remaining Stakeholder Meetings

May 20	3001 W. Broadway, Moses Lake	May 21	Walla Walla University, CTC Room 105, Walla Walla
May 21	Cowlitz County PUD, 961 12th St., Longview	May 22	Pacific Power Auditorium, 500 North Keys Rd, Yakima
		June 11	Hampton Inn, 3985 Bennett Dr, Bellingham

Electrical Equipment Must Meet Manufacturing Safety Standards

RCW 19.28.010 requires all materials, devices, appliances, and equipment under the jurisdiction of the electrical law must be "*of a type that conforms to applicable standards or be indicated as acceptable by the established standards of any electrical product testing laboratory which is accredited by the department.*" There is nothing new about the requirement that electrical equipment be manufactured to appropriate safety standards, it's been in Washington Law for over forty years. OSHA and most states have similar requirements, but many states lack the resources to strictly enforce them.

There are many quality manufacturing firms that get their products certified (and identified, marked, or labeled) by third-party product testing laboratories and safety standards experts. However, there are product manufacturers willing to sell untested, electrical products to unsuspecting and uninformed customers. This questionable business practice may give additional profit and competitive advantage to the manufacturer, but it unfairly places the burden of proof of electrical safety on the consumer or end user.

The electrical contractor and installer would best serve their customers by making them aware of these requirements as early as possible in the design and planning stage of a project. Preventing the purchase of equipment that is not tested or evaluated for electrical safety leaves a better impression with your customer and can prevent costly delays at the end of the project.

Emergency Rules And 2008 NEC Code Update Classes

Due to previous requirements in chapter 296-46B WAC, 2008 NEC continuing education courses submitted to the department have all been approved in the "industry related" category only. A rule revision effective May 1, 2008, will allow us to accept 2008 NEC-based courses in the "code update" category. On that date, we will begin approving 2008 NEC "code update" course submittals.

We will also change the status of the previously approved 2008 NEC-based courses from "industry related" to "code update" in the continuing education database. If you previously attended one of the 2008 NEC "industry related" classes, its status in your continuing education records will be changed to "code update." You can verify this change in your records by looking at your continuing education records online. Go to: https://fortress.wa.gov/lni/bbip/. Choose to search by your Name or License Number then left click on your certificate number. Scroll to the bottom of your information page to view your continuing education records.

Installing Satellite Systems

Some of the most common questions we get about telecommunications installations involve customer satellite dish and conventional antenna systems receiving a telecommunications service provider's signal.

All satellite receiving equipment is on the customer side of the telecommunications network demarcation point and under the jurisdiction of RCW 19.28.400 and .420. Because of federal law, satellite system

installations are exempt from permitting and inspection. The telecommunications laws were passed by the legislature in 2001, to address increasing instances where the safety of buildings and the people occupying them was being degraded by poor telecommunications work. The department and city jurisdictions were finding serious problems, especially with fire wall penetrations and cable supporting. The legislation established a minimum level of regulation to address these types of problems.

A telecommunications contractor license is required for firms that do any work on satellite systems, including all or part of the dish (antenna) installation, cabling from the dish to the structure, and installation of the necessary conductors and interface equipment in or on the building. Any individual or firm found working on a satellite system without a telecommunications contractor or appropriate electrical contractor license is in violation of the contracting laws and may be issued a civil penalty of up to $10,000 per day per violation.

● Grounding Communications Circuits

NEC 800.100 contains the grounding requirements for communications circuits. The metallic parts of cable sheaths and primary protectors must be grounded per NEC 800.100(A) through (D). The requirements for electrodes used to ground communications circuits are in NEC 800.100(B).

NEC 800.100(B)(1) must be used for buildings that have a grounding means. Any building that has an electrical circuit will have a grounding means. There are seven options for the electrode. If available at the building, one of the seven must be used. "Available" means the means for grounding exists. Driving a ground rod solely for the communications circuits, in this case, is not allowed. The bonding jumper must be run to one of these electrodes, even if it is across the building.

NEC 800.100(B)(2) must be used for buildings that have no grounding means. The first option for an electrode in this case is either: metal underground water pipe, metal frame of the building, concrete encased electrode, or ground ring installed as required in NEC 250.52(A)(1), (2), (3), or (4). If the building has none of these electrodes installed, the electrode may be an effectively grounded metal structure, or to a ground rod or pipe not less than 5' in length and ½" in diameter. See NEC 800.100(B)(2)(2) for more installation details.

If separate electrodes are used, the electrodes must be bonded with a minimum 6 AWG copper jumper (NEC 800.100(D)). The connections to all grounding electrodes must comply with NEC 250.70. The grounding or bonding conductor must be connected to the building service's grounding electrode.

The grounding conductor connecting the communications equipment to the electrode must be a minimum 14 AWG copper. Specific requirements for the grounding conductor installation are in NEC 800.100(A).

● Luminaire Ballast Disconnects

We need to provide consistency in the enforcement of NEC 410.73(G) regarding the requirement for disconnects for fluorescent luminaire ballasts. Specifically, we were asked "*Do I need to install a ballast disconnect when I am replacing an existing ballast in an existing luminaire with an electronic ballast as part of an energy upgrade project?*"

Only new luminaires installed in areas that do not meet one of the five exceptions to NEC 410.73(G) will be required to be equipped with ballast disconnects as required in NEC 410.73 (G). Existing luminaires installed prior to January 1, 2008 will not be required have a ballast disconnect installed when the ballast is changed with a like-in-kind replacement or replaced with an energy-efficient ballast or otherwise retrofitted.

● Electrical Question of the Month

This Month's Question: A medical device approved under US Public Law No. 94-295, 90 Stat. 539: **A)** is exempt from inspection of the supply circuit, **B)** is required to be listed, **C)** is compliant with state electrical laws (RCW 19.28), **D)** must be serviced by a certified electrician.

April's Question: The electrical inspector has the right, at all hours, to enter a building in the discharge of his or her official duties. **Answer:** False [RCW 19.28.101(4)]

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ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 11 No. 4** **April 2008**

Upcoming Electrical Stakeholders Meetings

Stakeholder meetings will run through June 2008 at the locations listed below. It is important for you to stay up to date with changes that might affect you. You have an opportunity to get your questions answered and give the Electrical Program your valued input when you attend a stakeholder meeting. Please join us at 6:00 p.m., at one of the remaining stakeholder meetings near you.

Safety Tip of the Month!

Be alert for hazardous confined spaces. Toxic gas and lack of oxygen kill. Tanks, trenches, containers, and even an open manure pit can have deadly gases.

2008 Remaining Stakeholder Meetings

May 20	3001 W. Broadway, Moses Lake	May 21	Cowlitz County PUD, 961 12th St., Longview
May 21	Walla Walla University, CTC Room 105, Walla Walla	May 22	Pacific Power, 500 North Keys Rd., Yakima
June 11	Hampton Inn, 3985 Bennett Dr, Bellingham		

2008 WAC Rule Process

The proposal period for WAC changes is closed. No additional proposals will be considered from outside L&I at this time. The Technical Advisory Committee (TAC) application period is also closed. When we have completed reviewing the TAC applications, the membership list for the TAC is posted on our Web site at: http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/RuleDev/Default.asp

The November 2007 Special Edition Electrical Currents details the complete 2008 WAC process and is available at: http://www.lni.wa.gov/TradesLicensing/Electrical/files/currents/elc0711special.pdf

The TAC will meet in June to review all the external proposals. Use the "Get E-mail Updates" button on the electrical Web site to join the Electrical Listserv and stay informed about all Electrical Program news.

2008 Legislative Session

The 2008 legislative session is over. There were no successful bills that require electrical rule making or affect the Electrical Program.

Pool Equipotential Grids

NEC 680.26(C) describes the specific requirements for the equipotential bonding grid for pools with paved walking areas (e.g. concrete, tiles, pavers, wood, etc.). The grid must extend from the inside walls of the pool at least 3' under the walking area. Depending on the type of pool construction, you have three options for constructing a grid under the walking area:

Structural reinforcing steel – This option can only be used with a steel reinforced concrete pool. Uninsulated steel structural reinforcing bars may be used to make a grid if they are bonded together with steel tie wire or equivalent.

Bolted/welded metal pools – The wall of a bolted or welded metal pool may be used as the grid.

Alternate means – This option can be used when a deck media exists (e.g. concrete, pavers, wood deck, etc.). The grid must be made of a minimum #8 solid copper conductor that is bonded at all crossing points. The grid must cover the entire area from the contour of the pool and extending at least 3' under the pool deck. The grid must be made in a 1' x 1' perpendicular pattern ± 4". The grid must be secured within or under the pool and deck media.

The 2005 NEC does not have specific grid installation methods for a pool with no paved walking area (e.g. grass, gravel, etc.). The lack of description does not eliminate the requirement for a grid. For the perimeter area around these pools, L&I inspectors will accept a single, minimum #8 solid copper, conductor that is installed between 18" and 24" of the contour of the inside wall of the pool and is buried under the perimeter surface at least 6" below grade. Only listed splices will be accepted.

All metal parts requiring bonding in NEC 680.26(B) must be bonded to the equipotential bonding grid.

The 2008 NEC modifies some of these requirements. They will be covered in a future newsletter.

Physical Protection For Nonmetallic Sheathed Cable

Nonmetallic sheathed cable (NM) regulated by NEC 334 is allowed to be installed in many environments and structure types. The physical protection requirements for NM cable are located in several places in the National Electrical Code (NEC).

Concealed work – NEC 300.4 has the protection requirements for several types of concealed cable installations (i.e. in wood structural members, in metal structural members, behind accessible panels, installed in shallow grooves, and at cable fitting points).

Concealing NM cable in shallow grooves in concrete walls formed and insulated by expanded polystyrene panels which remain on the interior and exterior surfaces of the walls; in foam-core OSB or plywood sheathed interlocking building panels; and in buildings where the primary wall construction materials are compressed straw require special consideration.

Conduit wiring systems are suitable for these types of construction. However, conduit systems must be inspected before concealment and must be installed by certified (01) journeymen electricians, with trainees in a maximum one-to one ratio. Nonmetallic-sheathed cable wiring methods can be used in these types of construction if the following guidelines are followed:

- All boxes must be rigidly supported from a structural member of the building by securing as described in NEC 314.23. Inspectors will not approve glue or spray foam adhesive to secure boxes. The installer must insure that the location of boxes in walls or ceilings complies with NEC 314.20.
- As allowed in NEC 300.4(E), nonmetallic-sheathed cables may be set in routed grooves or slots, or voids precast within the foam materials. The department will allow daubs of spray foam adhesive placed in the groove to secure NM cables at intervals not to exceed 4½ ft and within 12 in. of every cabinet, box, or fitting. Cables must be left visible for inspection and additional foam may be added after cover is approved. Spray foam adhesive/insulation must be a type approved for use with type NM cable.

Other requirements for NM cable protection in concealed work are straightforward and will not be discussed in this article.

Exposed work – NEC 334.15 has the protection requirements for installing exposed NM cable. These requirements are straightforward and will not be discussed in this article. However, the NEC does not define the term “protected from physical damage” for NM cable. NM cable is considered to be free from physical damage if the cable is installed in a manner that significantly reduces the chance of damage. Using a common sense approach, the installation method should not allow:

- Another object to lay on, lean against, or hang from the installed cable; or
- Expose the cable to direct hazard (e.g. be installed on a vertical face exposed to vehicle, or other similar damage).

Ground Rod Installation

NEC 250-53(A) and (G) require that ground rods be driven straight down to a depth of not less than 8 feet. If this fails then the electrode must be driven at an oblique angle not to exceed 45 degrees from the vertical. Where a rock bottom is encountered the electrode may be buried at the bottom of a trench that is at least 2 ½ ft. deep. Do not cut a ground rod off and use the shortened piece as an electrode. If you forget to put the ground rod clamp on the rod before driving it and mushroom the rod’s head, you may cut no more than 1” off the top of the rod using an angled cut (i.e. 20˚ to 45˚ across the rod) if you leave the cut piece attached (e.g. tape or other method) to the grounding electrode conductor just above the connection to the electrode. The inspector will use the cut piece to determine if the rod is full length.

Do not install a shortened ground rod for use as an electrode. If you do this or allow the trainee you are supervising to do this, you will be issued a gross violation citation and will likely receive a suspension of your electrician certificate.

Question of the Month

The electrical inspector has the right, at all hours, to enter a building in the discharge of his or her official duties. **Answer:** True or False

March’s Question was: Given: In general, on a single-motor circuit continuous duty 1 HP, 1-phase, 208 volt squirrel cage motor with a nameplate full load current of 12 amps. What is the minimum conductor ampacity? **Answer:** 11 amps [NEC 430.22, NEC 430.6(A)(1), NEC Table 430.248]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 11 No. 3** **March 2008**

Safety Tip of the Month!

Extension cords used outside should be specifically designed for outdoor, wet location use to guard against shock.

Upcoming Electrical Stakeholders Meetings

Stakeholder meetings will run through June 2008 at the locations listed below. It is important for you to stay up to date with changes that might affect you. You have an opportunity to get your questions answered and give the Electrical Program your valued input when you attend a stakeholder meeting. Please join us at 6:00 p.m., at one of the remaining stakeholder meetings near you.

2008 Remaining Stakeholder Meetings

April 9	Clark County PUD, 1200 Fort Vancouver Way, Vancouver	May 20	3001 W. Broadway, Moses Lake
May 21	Cowlitz County PUD, 961 12th St., Longview	May 21	Walla Walla University, CTC Room 105, Walla Walla
May 22	Pacific Power Auditorium, 500 North Keys Rd, Yakima	June 11	Hampton Inn, 3985 Bennett Dr, Bellingham

2008 Legislative Session

We are in the last days of the session. This is a list of all legislation currently being considered that might affect the Electrical Program:

- Senate Bill - HVAC/R mechanical regulation

You should visit the legislative web site for information on committee hearings and bill proposals that might affect you or the electrical industry at: http://www1.leg.wa.gov/legislature

2008 WAC Rule Process

We are in the last month of accepting WAC revision proposals and applications for the Technical Advisory Committee (TAC). March 31st is the last day for you to submit a proposal or application. See the November 2007 Special Edition Electrical Currents for details.

Electrician and Trainee Certification Must Be Shown To An Inspector

The statement on the back of your certification card is clear. "*You must be prepared to show this card to a Department of Labor and Industries inspector. You cannot allow anyone else to use this card. You may be asked to provide a second piece of identification.*"

RCW 19.28.321 requires L&I and city electrical inspectors to "*enforce the provisions of this chapter in their respective jurisdictions*." If an electrical inspector observes the work you have done or are doing under chapter 19.28 RCW, you must present your electrician or training certification and other means of identification when asked. If this request is refused the electrical contractor and administrator, and the individual worker will be subject to citation by the department.

Grounding RV Power Pedestals In A Recreational Vehicle Park

A feeder is supplying several RV pedestals or sub-panels in a recreational vehicle park. Is each pedestal/sub-panel required to have a grounding electrode system installed?

No, the service supplying the feeder requires a grounding electrode system to be installed, but the pedestals/sub-panels do not require a separate grounding electrode system. NEC 551.76(A) contains the grounding requirements for RV site supply equipment.

Each pedestal/sub-panel must be grounded by a continuous equipment grounding conductor run with the circuit conductors from the service equipment or the transformer of a secondary distribution system. The equipment grounding conductor may be spliced using a listed means. The installation of the equipment grounding conductors must be made so that the disconnection or removal of a receptacle or other device will not interfere with, or interrupt, the grounding continuity.

NEC 551.76(C) prohibits a neutral conductor from being used as an equipment grounding conductor for a recreational vehicle or for equipment within the recreational park. The neutral conductor is only allowed to be bonded to the grounding system at the service point. Where lightning protection is desired, supplementary grounding electrodes may be connected to the equipment grounding system.

● Please Be Aware! - Internet Electrical Equipment Purchases

Please be alert and cautious when buying or specifying electrical equipment from the internet. Recently, we have had several cases where electrical equipment has arrived at the jobsite without a testing laboratory listing mark. Unlisted equipment cannot be installed in Washington.

If there is no listing mark, you will have to get a field evaluation from an approved testing laboratory, or in the case of industrial utilization equipment, you may prefer to get an engineering evaluation. Either of these options will cost you time and money. Make certain that the equipment you are buying on the internet is acceptable before clicking the BUY button. One recent case involved $80,000 worth of lighting fixtures that cannot be installed.

● Sign Disconnects

A disconnecting means is required for each sign or outline lighting system (NEC 600.6(A)). Exit signs and cord connected signs do not have a disconnect requirement. The disconnect means must open all the ungrounded circuit conductors and be externally operable without opening doors or other mechanical parts. Note that the NEC definition for “within sight” says the equipment must be visible and within 50’.

For a sign or outline lighting system that is operated without a controller, the disconnect must be:

- External to the sign/system; and
- Within sight of the sign or be capable of being locked in the open position.

If the sign or outline lighting system is operated by an electronic/electromechanical controller that is external to the sign/system the disconnect means:

- Can be within the controller or within sight of the controller (Note: As written, the NEC allows the disconnect to be out of sight);
- Must disconnect the sign or outline lighting system and controller from all ungrounded conductors; and
- Must be designed so that all the disconnecting poles operate together and are capable of being locked in the open position.

The NEC allows the disconnecting means to be located remotely from the sign or outline lighting system in both cases. The disconnecting means may be a locking device on a circuit breaker or an externally operable switch with locking capability so long as all ungrounded conductors are disconnected at the same time.

● Question of the Month

Given: In general, on a single-motor circuit continuous duty 1 HP, 1-phase, 208 volt squirrel cage motor with a nameplate full load current of 12 amps. What is the minimum conductor ampacity? **Answers:** 8.8, 10.1, 11, 11.4

February’s Question was: GFCI protection is required for all 125V, single-phase receptacles not exceeding 30 amperes located within 5 ft, measured horizontally from the inside walls of a hydro massage bathtub.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 11 No. 2** **February 2008**

Safety Tip of the Month!

Look for telltale signs of electrical problems such as dimming of lights, frequent circuit breaker trips or blown fuses.

Upcoming Electrical Stakeholders Meetings

Stakeholder meetings will run through June 2008 at the locations listed below. It is important for you to stay up to date with changes that might affect you. You have an opportunity to get your questions answered and give the Electrical Program your valued input when you attend a stakeholder meeting. Please join us at 6:00 p.m., at one of the remaining stakeholder meetings near you.

2008 Remaining Stakeholder Meetings

February 20	100 Oyster Bay Ave., Public Works Conference Rm., Bremerton	February 21	City Council Chambers, 321 E 5th St., Port Angeles
April 9	Clark County PUD, 1200 Fort Vancouver Way, Vancouver	May 20	3001 W. Broadway, Moses Lake
May 21	Cowlitz County PUD, 961 12th St., Longview	May 21	Walla Walla University, CTC Room 105, Walla Walla
May 22	Pacific Power Auditorium, 500 North Keys Rd, Yakima	June 11	Hampton Inn, 3985 Bennett Dr, Bellingham

2008 WAC Rule Process

We are in the second month of accepting WAC revision proposals. March 31st is the last day for you to submit a proposal. See the November 2007 Special Edition Electrical Currents for submission details.

In March, we will be taking applications for the 49 member Technical Advisory Committee (TAC). The TAC process has proven to be very valuable in past years. The department will again appoint an advisory General TAC made up of experts and interest group representatives to review and make recommendations on proposals from the electrical industry.

Persons interested in becoming TAC members must submit a letter of interest for specific positions to the Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460 to be received from March 1, 2008, to March 31, 2008. The letter should show constituency support for the prospective member. All applications will be evaluated to determine that the applicant meets the requirements for the position. The General TAC makeup will be based on an equitable distribution relative to proportion of involvement within the electrical industry in Washington. TAC membership provides an opportunity for everyone interested in the Electrical Program's WAC development to participate in the process.

If necessary, each successful candidate may have an alternate attend the General TAC meeting. There will be no formal alternate assigned by the department. Any TAC member that is absent must notify the Chief Electrical Inspector of the alternate's name one day prior to the General TAC meeting. Failure to make the required notification will result in the position being vacant during the meeting.

Borrowing Electricians

If you are an electrical contractor and decide to loan/supply your electricians to another contractor, the simplest arrangement is to release them to the other contractor and transfer them to that contractor's payroll for the entire project time period. This way there is no question of responsibilities or control.

If you retain employees on your payroll and loan/supply labor to another electrical contractor you must meet the same requirements as any construction employment agency. The department must make sure the intent of chapter 19.28 RCW is met. When you share labor there must be a **written contract** between the two parties **prior** to loaning the workers. The contract must state the duration of the loan period and the individual(s) involved. The contractor loaning the labor must give up the ability to recall the workers until they are released by the borrower, even though they remain on the payroll of the loaning contractor. Since the loaning contractor gives up "control" of the employees, the contract is limited to one continuous time period.

The electrical contractor borrowing the electrician has complete control and responsibility for the individual through the duration of the employment contract. This means that the borrower must have the

ability to dispatch, retain, and terminate the individual involved in the contract. The individual electrician (or trainee) must be properly certified for the work they are performing. The borrower must be a licensed electrical contractor. The contractor borrowing the labor will be held responsible for the performance and proper supervision (including affidavits of experience for trainees) of the borrowed individual.

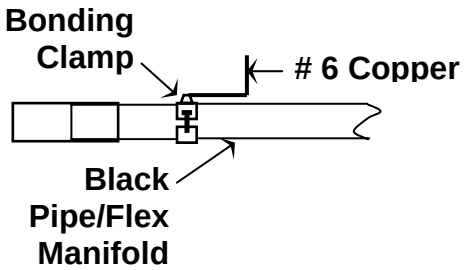
● Bonding Flexible Gas Piping

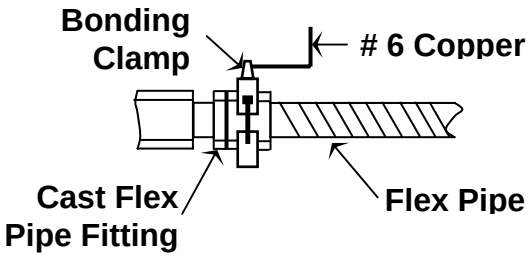
Flexible metal gas piping systems manufacturers generally require bonding methods that are somewhat different from the NEC 250.104(B) requirements. Effective March 1, 2008, for flexible gas piping bonding, L&I will accept the bonding methods shown in the diagrams below. These diagrams are typical of most manufacturers' bonding instructions. The bonding at the flex gas pipe must be accessible and occur as close as possible to either the electrical service location or the gas meter. The bonding must terminate on either the:

- Service equipment enclosure;
- A service grounding electrode conductor or electrode; or
- Neutral conductor bus in the service enclosure.

Any other bonding method must be substantiated by providing the inspector with the specific manufacturer's instructions for bonding the piping system before the inspection is made.

If any other bonding method is used and the manufacturer's instructions are not available at the time of inspection, the inspector will consider the installation not ready for inspection and a trip fee will be necessary for the required re-inspection.





● Pool/Spa/Hot Tub – Testing Lab Listing & Disconnecting Requirements

RCW 19.28.010(3) requires all pool, spa, and hot tub equipment to be listed by an approved electrical testing laboratory before being offered for sale or exchange. This includes internet or other wholesale/retail sales. Field evaluation is not an option. The equipment must be listed.

Except for pool lighting, NEC 680.12 requires a maintenance disconnecting means for pool, spa, hot tub, and similar utilization equipment. The maintenance disconnecting means must:

- Disconnect all ungrounded conductors supplying the equipment.
- Be within sight and within 50' of the equipment.
- Be "Readily accessible" means being capable of being reached quickly for operation, renewal, or inspection without climbing over or removing any obstacles or using a portable ladder. This includes having to use tools to gain access.
- Be at least 5' from the inside wall of the pool, spa, or hot tub (WAC 296-46B-680).

NEC 680.41 requires an emergency shutoff for all non residential spas and hot tubs. NEC 680.41 requires the emergency shutoff to be:

- Clearly labeled.
- At least 5' from the spa or hot tub.
- Within sight and within 50' of the equipment.

● Question of the Month

GFCI protection is required for all 125V, single-phase receptacles not exceeding 30 amperes located within 5 ft, measured _____ from the inside walls of a hydro massage bathtub.
Answers: A) vertically, B) horizontally, C) across, D) none of these.

January's Question was: A series circuit contains 1 path for current flow.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 11 No. 1** **January 2008**

Safety Tip of the Month!

Keep generators dry. Consumer grade generators are not weatherproof and can pose the risk of electrocution and shock when used in wet conditions.

Upcoming Electrical Stakeholders Meetings

Stakeholder meetings will run through June 2008 at the locations listed below. It is important for you to stay up to date with changes that might affect you. You have an opportunity to get your questions answered and give the Electrical Program your valued input when you attend a stakeholder meeting. Please join us at 6:00 p.m., at one of the remaining stakeholder meetings near you.

2008 Remaining Stakeholder Meetings

February 20	100 Oyster Bay Ave., Public Works Conference Rm., Bremerton	February 21	City Council Chambers, 321 E 5th St., Port Angeles
April 9	Clark County PUD, 1200 Fort Vancouver Way, Vancouver	May 20	Location to be determined, Moses Lake
May 21	Cowlitz County PUD, 961 12th St., Longview	May 21 (also)	Walla Walla College (tentative), Walla Walla
May 22	Location to be determined, Yakima	June 11	Hampton Inn, 3985 Bennett Dr, Bellingham

The Legislature Is In Session

The legislature convenes January 14th for a short session. The regular session will adjourn on March 13th. Bills, so far that might affect the electrical industry, include:

- Senate Bill 6190 – eliminating the equipment listing requirements for wineries
- Senate Bill unknown # - HVAC/R mechanical regulation

You should visit the legislative web site for information on committee hearings and bill proposals that might affect you or the electrical industry at: http://www1.leg.wa.gov/legislature

Electrical Trainee Education

Formal education is a requirement for electrical trainees. The electrical law requires that each trainee take at least 16 hours of approved classroom education during each two year renewal cycle. A trainee renewing after December 31, 2007, must have at least 16 hours of approved classroom education. If a trainee lets their certificate lapses, for any reason, the classroom education is still required to renew the training certificate. Reinstating a lapsed training certificate is the same as a renewal. The intent of the law is to require anyone wanting to continue to work in the electrical industry as a trainee to have classroom education.

The electrical industry (i.e. contractors and trainers) is responsible for providing all electrical training. L&I does not provide classes for trainees. There are about 16,000 electrical trainees. Only 43 classes have been submitted and approved. It is your responsibility as a contractor to ensure your trainees have the necessary training and education.

You already provide training for all your employees. Make it official; become an approved course provider as an electrical contractor. If you are a certified electrician or administrator, you can become an approved instructor. If you want to ensure good training for your staff, you can provide continuing education classes and trainee classes. Contact Sheila Lisle at (360) 902-5210 for details about how to get your class approved. You can also look at WAC 296-46B-970(4) and (5) for more information.

Course Application (F500-068-000) at: http://www.lni.wa.gov/FormPub/Detail.asp?DocID=1800
Instructor Application (F500-090-000) at: http://www.lni.wa.gov/FormPub/Detail.asp?DocID=1808

Compliance Violator List

We have begun posting "all" electrical compliance violations that have become a final judgment on the electrical website instead of quarterly in the *Electrical Currents* newsletter. This is to better address compliance issues across the state, respond to your requests for information, and give you a better way

to stay informed. A final judgment means that all appeal rights have been exhausted and that a penalty is due or has been paid. The compliance violations posting can be found at:

http://www.lni.wa.gov/TradesLicensing/Electrical/violators/

Consumers, contractors, and electricians will now have information about everyone who has violated the electrical laws and received an electrical citation within the past three years. Please ensure that you and your electricians stay in compliance and do not commit a violation.

● Expired/Suspended/Revoked Electrical Contractors & Requesting Inspections

If an electrical contractor license is suspended, revoked, or expired an inspection request cannot be made. A contractor in this type of status is effectively out of business and any work done cannot be inspected. The contractor must either regain active status or, if a registered general contractor, may subcontract the completion of the work to a licensed electrical contractor. The new contractor must buy a permit for the work to be inspected. The new contractor cannot work on the previous contractor's permit.

● Provisional Permits Eliminate the Emergency

In 2004, the provisional permit label was created to allow an electrical contractor to begin their electrical work immediately in an emergency situation. Provisional labels allow an electrical contractor to immediately have a valid permit when doing service or maintenance work where the exact nature of the repair is unknown until the electrician is on the job site. The provision in WAC 296-46B-900(6) allowing the purchase and posting of the electrical permit to happen after the work is begun in an emergency should never be used by an electrical contractor. In an unforeseen or emergency situation, the electrical contractor should be posting a provisional permit label. The provisional electrical work permit label is an acceptable substitute for a normal permit for two working days.

Only licensed electrical (or telecommunications) contractors can use provisional electrical work permits. Provisional electrical work permit labels are sold in blocks of twenty for $200. Once purchased, they may be divided up between the contractor's service vehicles or personnel. The labels are bright yellow in color to easily differentiate them from the similarly formatted (bright pink) Class B basic electrical work labels. Refunds are not available for provisional electrical work permit labels, and the $10 individual label cost is not deducted from the normal permit fee. They are **not valid in city jurisdictions** that perform their own electrical inspections.

The certified electrician or telecommunications worker doing the installation must put the provisional permit label on the cover of the panelboard, overcurrent device, or telecommunications equipment supplying the circuit or equipment **prior to beginning the work**. The labels must be **completely** filled in using sunlight weather resistant ink. The contractor and job site portion of the **label must include all of the following information**:

- DATE OF WORK SITE ADDRESS, CITY, COUNTY
- ELECTRICAL CONTRACTOR'S NAME SITE OWNER NAME
- ELECTRICAL CONTRACTOR'S LICENSE # DESCRIPTION OF WORK
- INSTALLING ELECTRICIAN'S CERTIFICATE #

The contractor's portion of the label **must be returned to the L&I electrical office having jurisdiction for the inspection, within two working days** after the job site portion of the label is posted.

● Class 1 Control Circuits And Power Wiring

Class 1 control circuits and power supply circuits may be installed in the same cable, enclosure, or raceway when the equipment powered is functionally associated (NEC 725.26(B)(1)).

"Functionally associated" means the power circuit(s) and the control circuit operate the same electrical components. The Class 1 controls operating the ON/OFF circuit for a motor starter and the circuit power conductors for a motor controlled by that motor starter are functionally associated.

● Question of the Month

A series circuit contains _____ paths for current flow. **Answers:** 3, 2, 1, multiple

December's Question was: Where installed in raceways, conductors of size 8 AWG and larger shall be stranded?

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 12** **December 2007**

Safety Tip of the Month!

You must position metal and non-metal ladders (such as fiberglass) at a height and location that prevents the possibility of you or it contacting a power line.

Upcoming Electrical Stakeholders Meetings

Stakeholder meetings will run from now through June 2008 at locations listed below. It is important for you to stay up to date with changes that might affect you. You have an opportunity to get your questions answered and give the Electrical Program your valued input when you attend a stakeholder meeting. Please join us at 6:00 p.m., at one of the remaining stakeholder meetings near you.

2007-2008 Remaining Stakeholder Meetings

December 12	Labor and Industries Bldg. 12806 Gateway Dr., Tukwila	February 21	City Council Chambers, Port Angeles
February 20	100 Oyster Bay Ave., Public Works Conference Rm., Bremerton	May 20	3001 W. Broadway, Moses Lake
April 9	Clark County PUD, 1200 Fort Vancouver Way, Vancouver	May 21 (also)	Walla Walla College (tentative), Walla Walla
May 21	Cowlitz County PUD, 961 12th St., Longview	June 11	Hampton Inn, 3985 Bennett Dr, Bellingham
May 22	Location to be determined, Yakima		

Submitting Electrical Plans For Review

Plan review is a part of the electrical inspection process. Its primary purpose is to determine that the electrical designer calculated the electrical load properly and included the correct electrical equipment in the design. Plan review also reviews the designation of hazardous areas and the design of emergency and standby systems.

The plan review process is a review, not a quality control tool for submitters. Because of the quality of the plans we are receiving and the long delays taken by submitters to answer questions and make revisions, the reviewers have a significant backlog of work. It is not acceptable for a submitter to give us a plan that is incomplete, inaccurate, or not completely ready for review. If the design is complete and accurate, the review should be straightforward process. The reviewer should be able to quickly evaluate the plans and return them to you approved.

We routinely receive plans that are not ready for review or are in the process of being redesigned. It is unacceptable to do this to gain a placeholder in the reviewer's scheduled work, it is unacceptable. Anyone doing this jeopardizes their project and those of other submitters who are waiting for review.

When a plan review is required (see WAC 296-46B-901(15)), the plans must be submitted early enough to allow time for the review to be completed before the actual work is begun. This should be at least one month prior to going to bid to ensure that the project can proceed without delay. If the plans are not submitted prior to beginning the project or are rejected for any reason during the review process, inspections will not be made on the project. The reviewers screen the plans within one week of receipt. If plans are obviously lacking information, incomplete, or inaccurate, they will be immediately returned to the submitter for revision.

If, during the full review, the plans are returned to the submitter for similar reasons, the inspection process on the job site will stop. When the plans are resubmitted, they will drop to the bottom of the plan review queue. This can cause a significant delay to your review process.

When the plan reviewer is looking at plans, the reviewer may ask questions or ask for corrections so the design will meet code. The reviewer will document the request for information or plan correction in writing to the submitter. When a request is made, the submitter must provide any requested information or corrections within five working days. If the information or correction cannot be provided in that time frame, the review will stop and the plans will be returned to the submitter for modification.

Remember, your submitted plans must be:

- Legible
- Properly identified
- Clearly show the installation is code compliant

- Include panelboard and equipment schedules and one-line diagram
- Include load and fault current calculations
- Show existing loading characteristics if applicable

Do not jeopardize your project by submitting poorly designed plans. Submit your plans only when they are complete, accurate, and ready for final review.

New Arc Fault Circuit Interrupter Requirements

2005 NEC 210.12(B) changes the requirements for Arc Fault Circuit Interrupters (AFCI) effective January 1, 2008. NEC 210.12(A) says, *"All 120-volt, single phase, 15- and 20-ampere branch circuits supplying outlets installed in dwelling unit bedrooms shall be protected by a listed arc-fault interrupter,* ***combination type*** *installed to provide protection of the branch circuit."* Until January 1st, a branch/feeder AFCI is permitted.

We have verified with manufacturers and distributors that the new combination AFCIs are available for use, so there is no need to extend the implementation date required in the NEC.

Electrical WAC Rule Revisions & 2008 Legislative Session

A special edition of the Electrical Currents was published last month for the WAC rule revision process. If you have not read it, you can get a copy on the electrical website at:

http://www.lni.wa.gov/TradesLicensing/Electrical/WhatsNew/default.asp

We will be taking electronic proposals from January 1, 2008 through March 31, 2008. If you have a good proposal with justification, send it in. All proposals will be reviewed by the Technical Advisory Committee (TAC). Applications for membership to the TAC committee will be taken during March. This is your chance to be involved in the rule making process.

The 2008 legislative session is rapidly approaching. The short session runs from January through March. The Electrical Program is not proposing any legislation this session. Any bill that was not acted upon by the legislature last year may be reconsidered this year by the legislature. You should keep a close eye on any bill that might affect how you do business. A good way to stay informed is to be signed up for the Electrical Listserv. Through Listserv we will send automatic notices of everything we are aware of that might impact you. You may sign up on the Listserv at:

http://www.lni.wa.gov/Main/Listservs/Electrical.asp

#1 and #2 Most Frequently Written Electrical Corrections

The #1 correction continues to be for: no access, not ready, covered prior to inspection, can't locate and other issues that prevent the inspector from doing the inspection. This correction should never have to be written. It is up to the permit purchaser to arrange access, identify the job location, and do whatever is required to make sure the job is available and ready for inspection. This one correction wastes about 45 minutes of each inspector's work day and cost you time and money for additional trip fees.

The #2 correction is for failing to read and follow the manufacturer's instructions. Again, this correction should never need to be written. Instructions are provided for every piece of electrical equipment. If a 20 ampere circuit is required, install a 20 ampere circuit. If a separate circuit is required, install it. Following the manufacturer's instructions is a key component in making a quality and safe installation.

If these two corrections are eliminated, it will give back at least one more hour each day to each inspector for inspections and compliance work. The Electrical Program will begin to be more proactive with contractors who continue to receive these corrections. In order to respond to our legitimate requests for inspections, these corrections need to be eliminated.

Question of the Month

Where installed in raceways, conductors of size ___ AWG and larger shall be stranded?
Answers: A) 10, B) 8, C) 6, D) 4

November's Question was: A trainee may receive (06) limited energy credit for time worked when employed by a (09) telecommunications contractor doing telecommunications work if the work is supervised by a (06) specialty electrician. **False**, see RCW 19.28.161(3). An electrical contractor can only certify hours for the specialty for which they are licensed.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 11SE** **November 2007**

SPECIAL EDITION

New Electrical Code And Other Possible WAC Changes

The 2008 version of the National Electrical Code (NEC) has recently been published. This rule development process will evaluate the 2008 NEC for appropriateness with Washington's needs and for economic impacts before implementing the 2008 NEC. This rule development process will include possible modification to all sections of WAC 296-46B.

The Department Is Seeking Stakeholder Input For Proposed Rule Changes

Any stakeholder in the electrical industry may make proposals for additions and/or revisions to the Washington Administrative Code WAC 296-46B – Electrical Safety Standards, Administration, and Installation electrical rules. Proposals, from stakeholders, may be submitted from January 1, 2008, through March 31, 2008. Proposal submission guidelines are detailed below.

Rules are developed to aid both stakeholders and the department in clarification or enforcement of the intent of the electrical statute. Technical changes require evidence of a specific problem and substantiation that the proposal will provide a solution for that problem.

The department is responsible and has final authority for developing all rules. The department will act as the correlating body during the rule development process and may at any time promote rule change as necessary to accommodate statutory change or department policies or procedures.

Proposals For Change

The form shown in this edition must be used to submit rule proposals for the 2008 revision cycle. An electronic fill-in version of the form is available on our website homepage:

http://www.lni.wa.gov/TradesLicensing/Electrical

Industry proposals **must be received from January 1, 2008, through March 31, 2008**. The submitter may submit a proposal(s) by:

- Sending the proposal(s) as an email attachment to ***mailto:TAC2008@lni.wa.gov***; or
- Mailing a compact disc containing the proposal(s) to Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460.

Proposals will not be accepted before or after these dates. **All proposals** to WAC 296-46B **must be made electronically** using the form supplied by the department. All proposals must clearly identify original language as "new text." Proposed revisions should include the relevant existing text and should use the legislative format (i.e. Use underscore (or underlining) to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~)). **Proposals not submitted according to these instructions will be rejected.**

Keep Informed

There will not be a specific mailing list for this WAC process. Special WAC update postings will be maintained using the Electrical Program's *Electrical Listserv,* internet website, and *Electrical Currents* newsletter.

The best way to stay informed of the WAC process and other electrical issues is to join the *Electrical Listserv* at:

http://www.lni.wa.gov/Main/Listservs/Electrical.asp

General Technical Advisory Committee (TAC)

The TAC process has proven to be very valuable in past years. The department will again appoint an advisory General TAC made up of experts and interest group representatives to review and make **recommendations** on proposals from the electrical industry.

Persons interested in becoming TAC members must submit a letter of interest for specific positions to the Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460 **to be received from March 1, 2008, to March 31, 2008**. The letter should show constituency support for the prospective member. All applications will be evaluated to determine that the applicant meets the requirements for the position.

The General TAC makeup will be based on an equitable distribution relative to proportion of involvement within the electrical industry in Washington. TAC membership provides an opportunity for everyone interested in the Electrical Program's WAC development to participate in the process.

If necessary, each successful candidate may have an alternate attend the General TAC meeting. There will be no formal alternate assigned by the department. Any TAC member that is absent must notify the Chief Electrical Inspector of the alternate's name one day prior to the General TAC meeting. Failure to make the required notification will result in the position being vacant during the meeting.

The TAC – Process

The TAC will make recommendations on industry proposals and identify proposals that may have an economic impact on other specialties, small businesses, construction costs, or the cost of enforcement. TAC representatives must have decision-making authority at the committee meeting. Members who know they will be absent from a TAC meeting should make every effort to send an alternate. The TAC must review and evaluate proposals based on the need:

- To address a critical life/safety need;
- To address a specific state policy/statute;
- To maintain a fair competitive environment;
- To address a unique character of the State; or
- To correct errors and omissions.

The TAC will operate on a majority basis. A majority vote in support of a motion, of members in attendance, will be considered as significant support for the motion made on a specific proposal. The TAC can propose amended language to a proposal. All TAC members share an equal vote. The department will consider all TAC recommendations.

2008 WAC Revision Process – Proposed Sequence Of Events

- **October 2007** – File CR 101 – pre-proposal statement of inquiry
- **January 1, 2008** – Proposals from stakeholders to: amend or add to the existing WAC
- **March 31, 2008** – Close proposal period
- **March 2008** – Accept applications for TAC
- **May or June 2008** – General TAC meeting, Seattle area
- **August 2008** – File CR 102 –rule filing (opens the official required public comment period)
- **September 2008** – Public hearing(s)
- **October/November 2008** – File CR 103 – rulemaking order (adoption)
- **December 2008** – Effective rule

General TAC – Membership

Chairperson– Chief Electrical Inspector (non voting)

3	Electrical Board Members	1	Plumber
1	Consumer	7	01 Contractor
1	Training School	9	01 Journeyman Electrician
1	Continuing Education Provider	1	02 Residential Contractor
1	JATC	1	02 Specialty Electrician
1	Electrical Manufacturer Representative	1	03 Specialty Electrician
1	L&I Inspection Supervisor	1	06 Specialty Contractor
2	City Regulator (Supervisor & Inspector)	1	06 Specialty Electrician
1	WA Manufacturing Business	2	06A Specialty Contractor
1	Electrical Engineer	2	06A Specialty Electrician
1	Electrical Testing Laboratory	1	07 Nonresidential Maint. Electrician

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1 L&I Inspector
1 Electrical Utility
1 Telecommunications Utility
1 Plumbing Contractor
1 09 Telecommunications Contractor
2 AD HOC Specialty Contractor
1 AD HOC Specialty Electrician

Notes:

- All (49) positions are voting members.
- Contractor positions must be filled by a licensed electrical/telecommunications contractor or representative of an electrical contractor's association in Washington representing that specialty.
- Electrician positions must be filled by a certified electrician.
- The AD HOC contractor and specialty electrician positions must be filled by a specialty not otherwise represented on the TAC.
- The plumbing contractor position must be filled by a registered general or plumbing contractor or a representative of a plumber contractor's association in Washington.
- The plumber position must be filled by a certified plumber.

Methodology for Determining the Number of Electrical Contractor and Electrician Members						
License	**# of Contractors**	**% of Specialties**	**# of TAC Members**	**# of Electricians**	**% of Specialties**	**# of TAC Members**
1	2,647		7	17,086		9
2	341	12%	1	2,411	19%	1
3	125	4%	0	636	5%	1
03A	85	3%	0	378	3%	0
4	94	3%	0	288	2%	0
6	540	19%	1	2,394	19%	1
06A	881	32%	2	4,042	32%	2
06B	13	0%	0	37	0%	0
7	120	4%	0	1,463	11%	1
07A	13	0%	0	80	1%	0
07B	90	3%	0	524	4%	0
07C	1	0%	0	16	0%	0
07D	35	1%	0	185	1%	0
07E	4	0%	0	138	1%	0
9	416	15%	1			
10	25	1%	0	141	1%	0
AD HOC specialty	605	22%	2	1771	14%	1
Total Specialties	**2,783**		**7**	**12,733**		**7**
01 Multiplier	**0.95**			**1.34**		
Total	**5,430**		**14**	**29,819**		**16**
Notes for specialties:	<5% = 0 members					
	5 to 19.9% = 1 member					
	20 to 39.9% = 2 members					
	>40% = 3 members					
	Ad Hoc specialties are the total # of all specialties with less than 5% of the total specialties and may be represented by any specialty.					
Notes for 01:	01 members = # of total of electrical specialties times the 01 multiplier.					
	01 multiplier = # of 01 divided by the # of specialties					
General Note:	Unfilled positions will remain vacant					

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PROPOSAL FORM for 2008 WAC 296-46B Rule Changes

Mail CD to:

Chief Electrical Inspector
Department of Labor and Industries
Electrical Section
PO Box 44460
Olympia, WA 98504-4460

Email to: ***mailto:TAC2008@lni.wa.gov***

FOR L&I USE ONLY

Specific Rule #:

Date Received:

NOTES:

1. All proposals must be **received from January 1, 2008, through March 31, 2008**.
2. Limit each proposal to a single rule section. Use a separate copy for each proposal.

Date submitted: _____ **Name:** _____

Representing: _____ **Telephone:** _____

Mailing Address: _____

Email Address: _____

1. Proposal: *Include new or revised wording, or identification of wording to be deleted. Proposed text should be in legislative format. Use underscore to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~).*

2. Statement of Problem & Substantiation for Proposal: *Note: State the problem that will be resolved by your proposal and substantiation for your proposal.*

3. Check one: ☐ This proposal is original material ☐ This proposal is not original material

Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 11** **November 2007**

Safety Tip of the Month!

Look for signs that your electrical equipment has gotten wet. Discard electrical equipment that has been wet because it poses electric shock and fire hazards.

Upcoming Electrical Stakeholders Meetings

Stakeholder meetings will run from now through June 2008 at locations listed below. The *Electrical Currents* will list future meeting addresses when the facilities are booked. It is important for you to stay up to date with changes that might affect you. Attending stakeholder meetings gives you an opportunity to get your questions answered and give the Electrical Program your valued input. Please join us at 6:00 p.m., at one of the remaining stakeholder meetings near you.

2007-2008 Remaining Stakeholder Meetings

November 14	The Orcas Room on the 5th floor of 950 Broadway Bldg., Tacoma	December 12	Labor and Industries Bldg. 12806 Gateway Dr., Tukwila
February 20	Location to be determined, Bremerton	February 21	Location to be determined, Port Angeles
April 9	Clark County PUD, 1200 Fort Vancouver Way, Vancouver	May 20	Location to be determined, Moses Lake
May 21	Cowlitz County PUD, 961 12th St., Longview	May 21 (also)	Location to be determined, Walla Walla
May 22	Location to be determined, Yakima	June 11	Location to be determined, Bellingham

COUNTERFEIT Square D Circuit Breaker – RECALL!!!

The U.S. Consumer Product Safety Commission (CPSC), in cooperation with Connecticut Electric & Switch Mfg. Co (Connecticut Electric), of Puyallup, WA, has recalled counterfeit Square D Circuit Breakers due to fire hazard. There are about 64,000 circuit breakers in the recall. The breakers were made in China, are counterfeit and could fail to trip when they are required to, posing a fire hazard to consumers.

There has been no report of incidents or injuries associated with these breakers. The counterfeit breakers are black and are marked as Square D products. Connecticut Electric has identified the following breakers as possibly being counterfeit: QO115, QO120, QO140, QO2125, QO215, QO220, QO230, QO240, QO250, QO260, QO1515, QO2020, QO3100, QO320, QO330, QO340, QO360, QOB120, QOB130, QOB220, QOB230, QOB250, QOB330, and QOB360. Actual Square D circuit breakers have (a) the amp rating written on the handle in white paint on the front of the breaker; (b) the Square D insignia molded onto the breaker side, and; (c) a yellow chromate mounting clip with half of the top of the clip visible. If your Square D breaker does not match this description, it could be counterfeit.

Sold through: Electrical Distributors and hardware stores nationwide from February 2005 through August 2006 for between about $6.50 and $15.50. **Remedy**: Consumers should contact Connecticut Electric to determine if the breaker they have is counterfeit and if necessary, to arrange for a free inspection and replacement or refund. **Consumer Contact**: For more information, Call Connecticut Electric at (866) 264-3702 from 8 a.m. to 5 p.m. ET Monday through Friday or visit the company's Web site at http://www.connecticut-electric.com. Consumers also can obtain additional information by emailing Connecticut Electric at: mailto:bdunham@connecticut-electric.com. To see this recall on CPSC's web site, including pictures of the recalled product, please go to: http://www.cpsc.gov/cpscpub/prerel/prhtml08/08054.html

Who Must Have A Training Certificate?

Any person working in the electrical trade, including apprentices, who is trying to qualify to take an electrician exam must have a valid training certificate during their training period (see RCW 19.28.191(2)). There is no exception for this if the worker wants to gain qualifying on the job experience hours.

Homeowners and employees of a business do not need to have a training certificate if they are not trying to qualify to become an electrician.

Entela Laboratory Listing Mark

Entela, Inc. is now owned by Intertek Testing Service NA, Inc. Entela's approval is expired and the Entela listing mark is not approved in Washington. Any products now being installed with an Entela listing mark will require field evaluation before being approved by the electrical inspector.

Listing, Field Evaluation, Or Engineering Evaluation?

To ensure electrical safety, the legislature requires that ALL electrical equipment be built to conform to applicable standards for electrical safety.

The recent recall of toys made in China (i.e. lead poisoning) and the large number of counterfeit products imported into the country show that manufacturing standards and independent evaluation are critical in ensuring a product's safety.

Electrical product review is very technical and often requires sophisticated testing equipment to evaluate plastics, metal fatigue, flame spread characteristics, ampacity capability, etc. Owners, contractors, and inspection staff do not normally have the expertise, equipment, or information available to make this review.

For industrial utilization equipment approval, there are several options for the equipment purchaser:

- Install accredited electrical testing laboratory "listed" equipment. Many types of electrical equipment imported from outside the US are "listed." Listing is an option for any manufacturer in the world.
- Hire an accredited electrical testing laboratory to do a "field evaluation";
- Hire an accredited electrical engineer to work with the equipment manufacturer and the purchaser to review the standards that the equipment was built to. The manufacturer should be made aware of the approval requirements prior to the purchase. It is to the purchaser's advantage to ask for the required documentation from the manufacturer prior to receiving the equipment; or
- Have the inspector do a normal inspection of every component (e.g. wiring, relays, switches, etc.) if the component (equipment) is listed by an accredited electrical testing laboratory and the wiring methods are NEC compliant. This is not an option for equipment containing any unlisted components.

If industrial utilization equipment used directly in a manufacturing process was built to an appropriate standard, and the equipment manufacturer works with the purchaser and the reviewing engineer to complete the review process, approval using the engineering evaluation process may be to your advantage (i.e. lower cost and shorter timeline).

For ALL other electrical equipment, the equipment must be listed or field evaluated by an accredited electrical testing laboratory.

You can get current information about accredited product testing laboratories and engineering evaluation firms on our website at:

http://www.lni.wa.gov/TradesLicensing/Electrical/Install/default.asp

If you need your equipment to be in operation quickly, you should request, in writing, to have the ability to operate the equipment during the evaluation period from the Chief Electrical Inspector. To get approval, you must be in the process of evaluation or review with an accredited laboratory or engineer and have a definite deadline for the completion of the evaluation or review. The equipment must not have been modified since it was manufactured and it must be appropriate for the intended use. The Chief may grant temporary operational use until the evaluation or review can be completed.

If the equipment cannot be successfully evaluated or reviewed, it must be immediately disconnected and not used.

Question of the Month

A trainee may receive (06) limited energy credit for time worked when employed by a (09) telecommunications contractor doing telecommunications work if the work is supervised by a (06) specialty electrician. True or False?

October's Question was: Can a 07D electrician replace a compressor in a residential HVAC heat pump? **Answer is**: No. See WAC 296-46B-920(k)(i)(C).

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 10SE** **October 2007**

SPECIAL EDITION

Generator Transfer Switch Options

- **Optional Standby Systems Are A Good Way To Keep The Lights On**

Power outages can occur at any time and may last for a prolonged time. Anyone, who has endured a power outage, especially one that lasted more than a few hours, may be highly motivated to install an electrical generator to avoid a repeat experience.

To prepare for these expected power outages many people choose to purchase an optional standby system for their home or business. **Optional standby systems** also called "**back-up generators,"** are often installed to provide an alternate source of "on-site generated power" for residences, industrial and commercial buildings, and farms. You can restore power manually or automatically. Whether a small portable gasoline or a large diesel powered stationary generator, all back-up generator systems have the same purpose, to deliver safe usable electricity when and where it is most needed.

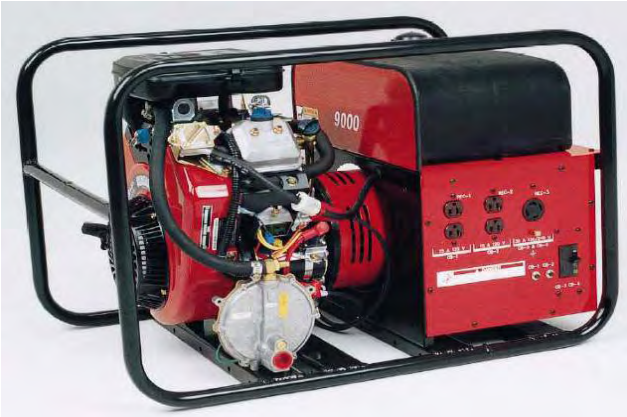
The Department of Labor and Industries has the responsibility of ensuring the safe delivery of all electrical power within every home and business. One thing all back-up generator systems have in common is the need for a way to transfer the power source from the utility to your generator. We will explore the various transfer switch options available for back-up generator systems within a home.

How will the generated electricity get from the generator to the electrical equipment that needs the power? When considering the installation of a back-up generator system the generator is only part of the equation.

The simplest back-up generator configuration might be to purchase a small inexpensive portable generator that delivers its electrical energy through an extension cord directly to specific pieces of equipment (e.g. refrigerator, freezer, microwave, portable room heater, lamps, etc.). The advantage of this type of installation is its low cost and flexibility; however, the electrical loads that may be connected are very limited. When you need to have generator power for permanently connected electrical equipment (e.g. furnace, oven, water heater, etc.), you must have a more sophisticated and permanent back-up generator wiring system. If you fail to properly install your back-up generator system, you and your family are at significant risk from suffocation, electrocution, and structural fire.

There are many types and sizes of back-up generators, and many variables to consider when installing your back-up generator system. Each size and type of back-up generator has different wiring connection requirements.

Stationary Optional Standby Generator



Portable Optional Standby Generator

- **Transfer Switches Are An Essential Part Of All Back-up Generator Systems**

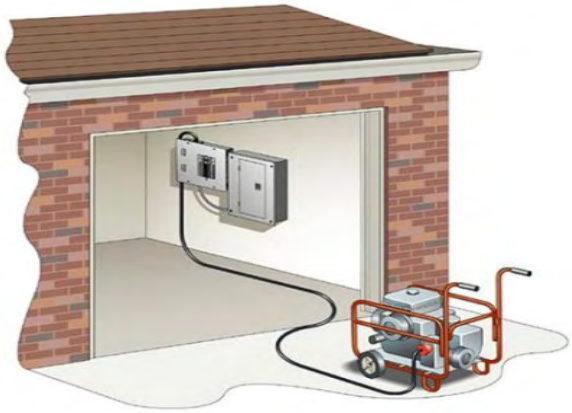
Generally, a "**transfer switch**" is a device designed to supply power to an electrical circuit from multiple power sources. A transfer switch is required for any back-up generator other than a portable back-up generator that uses an extension cord to supply single electrical loads like your refrigerator or a lamp.

A transfer switch is necessary to isolate the generator from the utility system when you install a back-up generator to your house's wiring system. Failure to properly transfer your power places you, your family, and utility workers at great risk of electrocution. Connecting a generator directly to any point of the home's electrical wiring without a transfer switch is illegal and dangerous due to the possibility of "back-feeding." Back-feeding happens when you connect your back-up generator directly to the home's wiring without having a legal transfer switch.

Without a legal transfer switch, your generator's electricity can be sent back into the power grid from your house. This will energize the utility's power lines in your street. This poses an electrocution hazard for utility workers and your neighbors who may not know that your voltage is present on the shared lines. If utility power is restored, your back-up generator and house wiring may be severely damaged.

- **Transfer Switches Can Be Manual, Automatic, Or A Combination Of Manual And Automatic**

Transfer switches can be manual or automatic and switch between multiple power sources. They can be very simple or very sophisticated in design and operation. They can send power to a single circuit or can be part of a panel that supplies multiple circuits. If your transfer switch is rated as *"Suitable for Use as Service Equipment,"* it will be considered to be your service disconnect and may be installed in your electrical system upstream from your electrical panel's main circuit breaker. Installing your transfer switch ahead of your main breaker will require some modifications to the wiring in your current service panel. Because of the complexities of wiring your transfer switch this way, you will likely need electrical experience yourself or you may need to hire a licensed electrical contractor to make the installation.



Manual Transfer Switches (MTS) are generally the least expensive and least complicated of the two types of transfer switches. MTS's require someone to be on-site to start and shut down the generator and physically operate the MTS. Manual transfer switches come in various sizes and different configurations to suit your specific application. Both portable and stationary generators may use manual transfer switch equipment.

Automatic Transfer Switches (ATS) monitor the power supplies and automatically switch from the normal (utility) supply over to the generator supplied power source in the event of a power outage.

ATS equipment can have many different control and alarm features. An ATS, with built in logic, can monitor the utility power, sense any power disruptions, and switch to an alternate power source. Some ATS equipment can even start and stop the generator on a predetermined maintenance schedule to assure the back-up generator works when you need it. In the event of a utility power failure, it is common for an ATS to automatically start your back-up generator and transfer your power source from the utility to the generator. When utility power is reestablished, the ATS will automatically transfer back to the normal supply and shut the generator down. Because of the complexities of using an ATS, we will not discuss their use in this article. If you want an ATS, you should probably hire a licensed electrical contractor to make your installation.

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Adding A Transfer Switch To Your New Or Existing Electrical Panel

If you are planning to add a transfer switch to your electrical system, there are several types and configurations available in the market to choose from. When choosing which piece of equipment is best for you, a transfer panel may be the logical choice. When you are buying your back-up generator and transfer switch, you must consider the voltage and amperage of the electrical loads you want to run. Some typical 120 volt loads in your house are: 1,500 watt – refrigerator, 75 watt – one lamp, 1,500 watt – microwave. If you are unsure what size back-up generator or transfer switch equipment to buy, you should consult a qualified electrical contractor or retail outlet.

There Are Several Ways To Install Your Transfer Switch

Installing an **aftermarket interlock accessory** kit is one of the least expensive ways to incorporate a transfer switch into your existing electrical system. Several panelboard manufacturers offer accessory kits designed to allow you to convert your existing electrical service panel to a sub-transfer service panelboard. Kits typically consist of a generator receptacle outlet, a circuit breaker suitable for back feeding, and a mechanical interlocking device (attached to the dead front cover of your existing service panel). Only use an interlock kit approved for your existing panelboard. Using another brand is extremely unsafe and could cause your family to be electrocuted or major damage to your house's electrical system.

Picture Courtesy of Generator Interlock Technologies

A **multi-circuit manual transfer switch panel** is compatible with small portable generators that are typically 5,000 watt (5 kilowatt) or smaller back-up generators. This common size back-up generator is usually available for purchase at most retail stores and is a good option for houses with an existing electrical panel. The installation of the multi-circuit manual transfer switch panel is relatively simple to other types of transfer switching methods, requires minimal changes to your existing wiring, and there is minimal interruption to your house's electrical power while making the installation. Multi-circuit manual transfer switch panels commonly come in 6, 8 and 10 circuit models. You can install them on the wall surface or flush in the wall next to your service panel. They come with a pre-wired wiring harness that connects directly into your existing panel. Inside your existing panelboard, you must splice the harness into any existing circuits you want to power from your back-up generator.

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The multi-circuit manual transfer switch panel comes with provisions to plug a power cord from your back-up generator into the front of the panel. As with other types of transfer switch panels, accessories are available to relocate the power inlet connection to a place outside the home avoiding the need to run a power cord from the generator to the transfer switch through a door or window.

A **transfer sub panel** is a good option for either new or existing electrical system installations. Installing a transfer sub-panel can accomplish many of the same goals as the use of a main transfer panel without some of the disadvantages. If incorporated into an existing home this option may involve some re-wiring of the existing service panel.

The transfer sub-panel is usually smaller than a main transfer panel, but is essentially identical to it in design and arrangement of circuit breakers. A standard circuit breaker in your existing panelboard feeds the "normal power" to your transfer sub-panel. You will connect two back-fed circuit breakers in your transfer sub-panel to your normal supply and back-up generator. You should size your back-up generator to carry the loads you need to operate.

If you are using a transfer sub-panel, you will not have to replace your existing legally installed service panel and you can choose your critical circuits in advance so you will not need to make circuiting decisions when you transfer power to your generator. You can leave all your branch circuits "ON."

A **main transfer panel** is one way to connect your back-up generator into your electrical system. The transfer panel is nearly identical in appearance and function to a typical house main panel. A transfer panel uses a back-fed circuit breaker to control power from your back-up generator and has a manual locking device that you must operate to shift from utility power to your generator. The main circuit breaker is usually located close to the back-fed generator breaker and cannot be closed if the manual locking device has been shifted to allow power from your back-up generator. The locking device prevents both breakers from being closed at the same time. This safety feature prevents back-feeding to the utility system and endangering utility workers and your electrical system.

This type of system requires removing and replacing your existing service panel, but there is generally no need for other extensive electrical work. If your back-up generator is not large enough to power all your circuits simultaneously, you will need to turn off enough of your branch circuit breakers in advance of transferring power so that you do not overload your back-up generator.

Pictures Courtesy of Eylander Corporation

● For Your Family's Protection – Be Aware

Transfer equipment is available that is not approved. All electrical equipment must have an appropriate **approval label** from a Washington approved electrical testing laboratory. It is very unsafe to use equipment that is not approved or properly installed and puts your family and utility workers at significant risk from electrocution. This type of electrical work **always requires a permit and an inspection** by your local electrical inspector. **Do not place anyone at risk from an improper electrical installation**. If you are at all **unsure of what you are doing, hire a licensed electrical contractor** to make your installation. Our electrical website has a list of licensed electrical contractors. They are properly bonded and qualified to do your job safely and economically.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 10** **October 2007**

Safety Tip of the Month!
Always maintain a safe distance away from overhead service drop conductors and the service mast while performing maintenance on your home's roof or gutters.

Upcoming Electrical Stakeholders Meetings

Stakeholder meetings will run from now through June 2008 at locations throughout the state. *Electrical Currents* will list future meeting locations and times. It is important for you to stay up to date with changes that might affect you. Attending stakeholder meetings gives you an opportunity to get your questions answered and give the Electrical Program your valued input. Please join us at 6:00 p.m., at a stakeholder meeting near you. For more information visit us online at:

http://www.lni.wa.gov/tradeslicensing/electrical/whatsnew/calendar/default.asp

Meeting Locations Through 2007			
October 10	2721 West 10th Kennewick	October 24	Snohomish County PUD, 2320 California St. Everett
October 17	L&I Bldg. Auditorium 7273 Linderson Way SW, Tumwater	November 14	The Orcas Room on the 5th floor of 950 Broadway Bldg., Tacoma
October 18	L&I Bldg. 415 W. Wishkah Suite 1B Aberdeen	December 12	Labor and Industries Bldg. 12806 Gateway Dr., Tukwila

What About Appliance Installation And Repair?

This *Electrical Currents* will clarify the Appliance Repair (07D) scope of work, licensing, certification, and permitting for contractors and electricians. There have been many *Electrical Currents* articles written about the Appliance Repair industry. To review past issues, go to: the Labor and Industries Electrical Currents archive site and use the search tool to locate past articles on "appliance repair".

http://www.lni.wa.gov/TradesLicensing/Electrical/WhatsNew/Currents/default.asp

Just What Is An Appliance?

There are many types of appliances found in restaurants, residences, shops, and other buildings. An "appliance" is a single self-contained manufactured machine that is listed and built to a standard size or type. It is installed as a stand-alone unit and designed to perform one or more specific functions. Appliances are connected to a single power source either by cord and plug or hard-wired.

Examples of Residential, Commercial, or Small Industrial Appliances			
Dishwasher	Vehicle Repair Equipment	Towel Warmer	Clothes Dryer/Washer
Refrigerator/Freezer	Portable Space Heater	Grinder/Polisher	Air Conditioner
Hood Fan	Insta-hot Water Heater	Office Equipment	Water Heater
Microwave	Self-contained Hot Tub	Trash Compactor	Vending Machine
Ice Maker	Self-contained Humidifier	Range/Stove	Garbage Disposal

What Is The Difference Between Cord And Plug And Hard-wire?

An appliance is "cord and plug" if the appliance is connected to an existing power outlet by a single "listed" cord and plug unit consisting of a one-piece molded plug and cord unit not exceeding 250 volts, 60 amperes, single phase. If allowed in the manufacturer's instructions, the plug and cord unit may be installed in the field per the product's listing requirements. The appliance must be a single manufactured unit not requiring any electrical field assembly except the installation of the plug and cord unit.

An appliance is "hard-wire if the appliance is connected to the electrical power by any method other than a listed one-piece cord and plug unit (e.g. separate cord and plug, flexible whip, etc.).

When Do You Need An Electrical Contractor And Electrician?

Be careful to make sure that any specialty maintenance contractor you hire is licensed to work on your type of appliance in the occupancy type you have. You can find detailed descriptions of all allowed scopes of work in WAC 296-46B-920. WAC rules are available at any L&I office for $5 each or online at:

http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/default.asp

An appliance connected to an existing electrical outlet by a listed one-piece molded cord and plug is exempt from electrical contracting, and electrician certification.

The new installation of a hard-wire appliance must be done by a licensed 01-general or 02-residential electrical contractor using certified 01 or 02 electricians and supervised trainees.

The replacement, repair, or service of a hard-wire appliance may be done by a licensed 01-general, 02-residential, 07(d) appliance repair, or appropriate maintenance specialty electrical contractor using appropriately certified electricians and supervised trainees.

● What About Permits And Inspection?

No permit or inspection is required for:

- An appliance connected to an existing electrical outlet by a listed one-piece molded cord and plug.
- The replacement of an existing hard-wire (see above for definition) appliance in a residence.
- The replacement of any like-in-kind control component in an existing hard-wire (see above for definition) appliance in any non-residential occupancy.

A permit and inspection is required for:

- New hard-wire (see above for definition) appliance installations.
- The replacement of an existing hard-wire (see above for definition) appliance in any non-residential occupancy.

If a new power outlet is required or an existing outlet needs to be relocated or modified to match the appliance, the outlet work must be done by an appropriately licensed electrical contractor. An electrical permit must be purchased by the installing electrical contractor followed by an inspection to ensure all electrical safety requirements have been met.

● Scope Of Work For The Appliance Repair Specialty (07D)

This specialty is allowed to service, maintain, repair, or replace household appliances, small commercial or industrial appliances, and other types of small electrical utilization equipment. It can perform the in-place like-in-kind replacement of the appliance if the same unmodified electrical circuit is used to supply the appliance being replaced.

This specialty also includes the like-in-kind replacement of all electrical components within the appliance. It can disconnect and reconnect line voltage supply whips not over six feet in length if there are no modifications to the characteristics of the electrical circuit supplying the appliance. The 07D contractor may also change a hard-wire to a plug and cord connection by installing an outlet box and outlet. A detailed description may be found in WAC 296-46B-920(k).

The 07D contractor is not allowed to work on other electrical wiring or any other electrical equipment or components. Under no circumstances are they allowed to perform any type of work in classified locations governed by NEC articles 500, 501, 502, 503, 504, 505, 510, 511, 513, 514, 515, or 516 or do any plumbing work regulated under chapter 18.106 RCW.

● Electrician Certification & Trainees Working On A Hard-wire Appliance

If you work on a hard-wire appliance, you must be a certified electrician or a supervised electrical trainee. To get electrical training experience you must have a valid training certificate.

For more information about qualifying to become an electrician, call (360) 902-5269. Or go to:
http://www.lni.wa.gov/TradesLicensing/Electrical/LicenseExamEd/LicenseCert/default.asp

● Question of the Month

Can a 07D electrician replace a compressor in a residential HVAC heat pump? Yes, or No?

September's Question was: The connection of a low voltage HVAC/R low voltage control system to a building's energy management system may be done by a HVAC/R specialty? **Answer is**: **False** See WAC 296-46B-920(f)(iv)

The Answer to August's Question concerning the calculated load for the service conductors on a 12-unit multifamily dwelling was missed in the September Currents. **The real Answer is: 382 amps**

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 9** **September 2007**

Upcoming Electrical Stakeholders Meetings

Stakeholder meetings will run from September through June 2008 at locations throughout the state. *Electrical Currents* will list future meeting locations and times. It is important for you to stay up to date with changes that might affect you. Attending stakeholder meetings gives you an opportunity to get your questions answered and give the Electrical Program your input. Please join us at a stakeholder meeting.

Parking passes are required for the meeting in Spokane. Pick up a parking pass at the L&I Spokane office or go to: http://www.lni.wa.gov/tradeslicensing/electrical/whatsnew/calendar/default.asp

Safety Tip of the Month!
Scrutinize the product, the packaging and the labeling. Look for a certification mark from an independent testing lab. Trademarked logos that look unusual may signal a counterfeit.

Meeting Locations			
September 24	Douglas County PUD No.1 1151 Valley Mall Parkway East Wenatchee	October 17	L&I Bldg. Auditorium 7273 Linderson Way SW Tumwater
September 25	Spokane Community College Lair Building, Sasquatch Room Spokane	October 18	L&I Bldg. 415 W. Wishkah, Suite 1B Aberdeen
September 26	City of Pullman offices 325 SE Paradise St. Pullman	October 24	Snohomish County PUD 2320 California Street Everett
October 10	Benton PUD 2721 West 10th Kennewick	November 14	The Orcas Room, 5th floor 950 Broadway Bldg. Tacoma

What About HVAC/R?

This *Electrical Currents* will clarify the HVAC/R scopes of work, licensing, certification, and permitting. The HVAC/R industry has two specific specialties, the:

- 06A – HVAC/refrigeration; and
- 06B – HVAC/refrigeration restricted.

If you want to do work that is not allowed for these specialties, you may need to get a combination or general electrical license. Many HVAC/R people also have 07 – Nonresidential Maintenance and/or 06 – Limited Energy licenses.

There have been many *Electrical Currents* articles written about the HVAC/R industry. To get past issues, go to: http://www.lni.wa.gov/TradesLicensing/Electrical/FormPub/default.asp

HVAC/R Grandfathering & Open Window

Many opportunities to apply previous HVAC/R work experience towards qualifying for electrician and administrator certificates were available from 1999, to 2004. Those opportunities are no longer available.

All experience must now meet the requirements of the electrical law, Chapter 19.28 RCW. If you applied for and gained credit for experience during the open window periods, you still have that experience credited to you. Use it to re-qualify for the HVAC/R exam.

You can get copies of the electrical laws or rules at any L&I office for $5 each or go to: http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/default.asp

HVAC/R Electrician Certification & Trainees

If you work on electrical wiring or equipment, you must be a certified electrician or a supervised electrical trainee. Electricians are restricted to the scope of work allowed for their certificate. Penalties for not having valid electrician certification begin at $250 per violation.

Trainee certificate	Application ($35)	Valid for 2-years	Renewal ($43, experience affidavit, & 16 hours of approved classroom education)
06A – HVAC/R electrician certificate	Application ($72, 4,000 hours of verified on-the-job experience & pass exam)	Valid for 3-years	Renewal ($67 & 24 hours of approved continuing education)
06B – HVAC/R restricted electrician certificate	Application ($72, 2,000 hours of verified on-the-job experience & pass exam)	Valid for 3-years	Renewal ($67 & 24 hours of approved continuing education)

06A training experience can be applied towards qualifying for the 01 – General Journeyman certificate. 06B training experience can only be applied towards qualifying for the 06A – HVAC/R certificate. To get training experience you must work under a valid training certificate.

Normally, trainees must work under supervision. Trainees can install thermostat cable when the HVAC/R system is a single thermostat in a single or two-family dwelling and the line voltage power has not been connected to the dwelling service.

For the 06A and 06B specialties, the ratio of supervision is one appropriately certified electrician for up to two trainees. The supervising electrician must be present for:

- At least 75% of the day for a 06A trainee; or
- 100% of the day for a 06B trainee.

An electrical trainee with 1,000 hours of 06B verified on-the-job experience may qualify to take the 06B exam early, and work without supervision until the required 2,000 hours of on-the-job experience have been gained.

To be eligible, the trainee must apply ($64), be approved, and pass the 06B exam. When the required hours have been achieved, the trainee must submit an application to become a 06B electrician. If the trainee has not gained the required 06B hours before the 0% supervision training certificate has expired, the trainee may apply for a 75% supervision training certificate ($43).

For more information about exams or becoming an electrician or trainee, call (360) 902-5269 or go to: http://www.lni.wa.gov/TradesLicensing/Electrical/LicenseExamEd/LicenseCert/default.asp

● Electrical Contractor Licensing & Electrical Administrators

You must be a licensed electrical contractor if you advertise, bid or are in the business of installing electrical wiring or equipment. Being a certified electrician does not allow a person to be an electrical contractor. Penalties for a violation of the electrical contractor licensing law begin at $500 per violation.

To become an electrical contractor, you must apply to L&I. Your application includes: the application fee ($221), an assigned electrical administrator application ($35), and a $4,000 bond or surety.

An administrator is responsible to ensure the electrical contractor and the contractor's electricians follow the electrical law's requirements (see RCW 19.28.061(5)). An administrator may only be assigned to one contractor at a time. The assigned administrator must be a full-time supervisory employee. A contractor can only have one assigned administrator, but may employ other unassigned administrators.

To become an electrical administrator, you must take the exam for the specialty you want to administrate. No pre-qualification is necessary to take an administrator exam. After passing the administrator exam, you must apply within 90 days to become an administrator ($100).

For more information about exams or becoming an electrical contractor or administrator call (360) 902-5269 or go to: http://www.lni.wa.gov/TradesLicensing/Electrical/LicenseExamEd/LicenseCert/default.asp

● HVAC/R Definitions

Specific HVAC/R definitions are included in WAC 296-46B-100(34). *"HVAC/refrigeration system" means a system of HVAC/refrigeration: Wiring, equipment, and components integrated to generate, deliver, or control heated, cooled...air. This definition excludes non-HVAC/refrigeration control systems (e.g. fire alarm systems, intercom systems, building energy management systems, and similar non-HVAC/refrigeration systems)."*

Dampers, actuators, control valves, motors, temperature sensors, HVAC/R unit equipment and other devices may be a part of an HVAC/R system if they are dedicated to the function of the HVAC/R system and serve no other purpose.

WAC 296-46B-920, Figures 920-1 and 920-2, help clarify what is in a HVAC/R system.

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● HVAC/R Scopes of Work

WAC 296-46B-920(2)(f)'s scope of work description for the 06A and 06B HVAC/R specialties is divided into three sections: general, 06A, and 06B. The general section applies to both specialties. These specialties allow the HVAC/R industry to do a broad scope of electrical work. Most HVAC/R contractors and electricians do not perform all parts of their allowed scope of work. All specialty exams include questions about the complete allowed scope of work, not just what the contractor or electrician does on a day-to-day basis. The highlights of the HVAC/R scopes of work are bulleted below. For specific scope of work details go to WAC 296-46B-920.

● General HVAC/R Scope of Work

The general HVAC/R scope of work section includes WAC 296-46B-920-(2)(f)(i) through (iv). This section contains: a reference to the definitions, a clarification for HVAC/R that allows a manufacturer's recommended replacement part to be considered like-in-kind for replacement purposes, and descriptions of what is and is not allowed for both specialties. **"Work on" means:** install, repair, replace, or maintain.

Both HVAC/R specialties may work on:

- HVAC/R low voltage controls in all types of residential occupancies. There is no floor limitation for residential so long as the work is inside the residence and not in a public area (e.g. inside a condominium of a high-rise building, but not the public areas);
- Line voltage components inside any HVAC/R equipment or the internal components of an HVAC/R disconnecting means so long as it is not in a panelboard or motor control center;
- Short lengths of raceway used to physically protect low voltage cables, and may repair, replace, or maintain existing line voltage supply whips not over 6' long where the circuit characteristics are not being changed. When replacing a supply whip, you may change the type of raceway (e.g. metal flex to non-metallic flex).

HVAC/R specialty may not:

- Install or replace a controller or disconnect switch that is external to the HVAC/R equipment;
- Work on integrated building control systems that are not exclusively for HVAC/R equipment;
- Work on single stand-alone line voltage equipment (e.g. baseboard heaters, radiant panels) or it's components unless: it is exclusively controlled by an HVAC/R system and has a connection to a mechanical system (e.g. ducting, piping), or contains a HVAC/R mechanical system (e.g. wall air-conditioner);
- Work on light fixtures that serve as a building lighting source;
- Work on any type of raceway/conduit systems (i.e. from one enclosure to another except for the supply whip);
- Work on line voltage service, feeder, or branch circuit conductors. If the feeder/branch circuit supplies a HVAC/R equipment that contains supplementary overcurrent devices both specialties may work on the conductors from the supplementary overcurrent protection to the supplementary HVAC/R equipment if the equipment and supplementary overcurrent protection are with sight of each other (see Figure 920-2);
- Work on any panelboard, switchboard, or MCC external to the HVAC/R system.

● Specific 06A HVAC/R Scope of Work

The 06A specialty is not limited by voltage, phase, or amperage. Unsupervised 06A trainees may not work on any HVAC/R equipment or system rated over 600 volts whether the circuit is "ON" or "OFF."

The 06A specialty may:

- Install HVAC/R low voltage control systems in non-residential occupancies:
  - When the building is limited to three stories or less above grade (basements and roofs are not considered stories);
  - All the following apply regardless of the number of stories where the HVAC/R wiring:
    - Does not pass between stories;
    - Is in a previously occupied and wired space (i.e. tenant improvement); and
    - Is restricted to the HVAC/R system.
- Repair, replace, or maintain HVAC/R low voltage control wiring and equipment regardless of the number of floors;
- Work on a bonding conductor for metal gas piping to an existing grounding electrode system when the connection can be made external to other electrical equipment.

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The 06A specialty may not work on any wiring outside the HVAC/R equipment in a classified location.

● Specific 06B HVAC/R Scope of Work

The 06B specialty is limited to HVAC/R systems not exceeding 250 volts, single phase, 120 amperes.

The 06B specialty may work on HVAC/R low voltage control systems in non-residential occupancies that have no more than three stories above grade.

The 06B specialty may not work on:

- HVAC/R low voltage wiring or equipment installed in a raceway; or
- On any HVAC/R wiring or equipment installed in a classified location.

● Permitting HVAC/R Work

Except for Class A work, all the work done by an HVAC/R contractor must be permitted by the contractor actually doing the work using either a normal electrical permit or a Class B label. Some HVAC/R type Class A items include: fuses, control components, thermostats, heating element, and motors smaller than 10 H.P. Go to WAC 296-46B-900(8)(b) to see a complete list of non-permitted items. The contractor doing the electrical work cannot ask another electrical contractor "to cover" their work with a permit. Penalties for permit violations begin at $250.

The HVAC/R contractor may always elect to buy a normal electrical permit, but this may be more expensive than using a Class B label. Class B labels are an inexpensive ($10) alternative for many types of HVAC/R installations.

Examples of HVAC/R type Class B work include:

- Thermostats;
- Motors larger than 10 hp;
- Wiring internal to a HVAC/R equipment;
- Like-in-kind replacement of an electric, gas, or oil furnace not exceeding 250 volts, 100 amps where the furnace is connected to an existing circuit;
- Like-in-kind replacement of an air conditioner/heat pump not exceeding 250 volts, 30 amps when the unit is connected to an existing circuit; and
- The repair or replacement of low voltage HVAC/R control wiring

Class B labels cannot be used in classified areas or areas regulated by NEC 517 or 680.

Class B labels are only available to electrical contractors and approved large commercial and industrial customers. The Class B label must be posted on the panelboard supplying power to the equipment or on the HVAC/R equipment itself before beginning any work. The electrician doing the work must accurately and completely fill out the label. Class B labels cannot be filled out by anyone other than the actual installer on the job. The contractor must return the contractor portion of the label to L&I within 15 working days after beginning the work. Class B labels are not refundable or transferable to another contractor.

Class B label are inspected on a random basis. L&I will use the information on the returned label to arrange the inspection with the owner. It is imperative that the information on the label be accurate.

If a correction is written on a Class B label, a fee ($35) will be charged to do the required reinspection and another Class B label will be inspected.

Go to WAC 296-46B-900(20) through (26) for full details on Class B label and how to use them. If you use a Class B label, fill them out completely and accurately and mail them to L&I as required.

● HVAC/R Summary

It is your responsibility to know and follow the electrical laws. If you need to get training, there are many associations, training facilities, and education providers available to help you. Do not hesitate to seek help if you are unsure. Get training or call any L&I office if you have specific licensing, certification, permitting, or code questions. We cannot design your work, but we will offer any help possible.

● Question of the Month

This Month's Question: The connection of a low voltage HVAC/R low voltage control system to a building's energy management system may be done by a HVAC/R specialty. True? False?

The August answer was: C) 382 amps [137,500 VA ÷ (208 V × 1.732 [square root of 3]) = 382 A]
[Hint: 3Ø voltage convention on our exams is 208 V(3Ø)=360 V; 240 V(3Ø)=416 V, 480 V(3Ø)=831 V]

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ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 8** **August 2007**

Schedule For Stakeholder Meetings

We have scheduled the stakeholder meetings for the fall and winter. Stakeholder meetings are important for both the department and the industry. Meetings are from 6 PM - 9 PM. This year we plan to spend equal time on local office issues, electrical program information, listening to your comments and answering your questions. Please take the time to attend the next meeting closest to you. (Additional meetings from Dec 2007 – May 2008 in Tukwila, Bremerton, Port Angeles, Vancouver, Moses Lake, Longview, Walla Walla, Bellingham, and Yakima will be announced when locations are reserved.)

Safety Tip of the Month!

Be sure to secure your extension ladder to the building and allow at least 3' to extend above the last point of contact.

Early Meeting Locations

Sep 24	**East Wenatchee** Douglas Co. PUD No.1, 1151 Valley Mall Parkway	**Oct 17**	**Tumwater** L&I Bldg. Auditorium, 7273 Linderson Way SW
Sep 25	**Spokane** Spokane CC, Lair Building, Sasquatch Room	**Oct 18**	**Aberdeen** L&I Bldg., 415 W. Wishkah, Suite 1B
Sep 26	**Pullman** City of Pullman offices, 325 SE Paradise St.	**Oct 24**	**Everett** Snohomish County PUD, 2320 California Street
Oct 10	**Kennewick** Benton PUD, 2721 West 10th	**Nov 14**	**Tacoma** The Orcas Room, 5th floor, 950 Broadway Bldg.

2008 NEC "Code Update" Continuing Education Courses

Due to the later (December 2008) target date for the 2008 NEC adoption, the department **will not** accept any applications for 2008 NEC Code Update continuing education courses before July 2008, maybe later. The actual date will be announced in a future newsletter. If your organization has already scheduled 2008 NEC training from a national continuing education provider, then the course may be submitted for approval in the "Industry Related" category. There is no advantage to getting Code training far in advance of it's applicability on the job site. Industry stakeholders may propose significant modifications during the rule development process.

Coming WAC Rule Revisions – Proposed Adoption Of The 2008 NEC

We want our stakeholders to have the opportunity to review the 2008 NEC for potential problems prior to opening the rule revision process. The National Fire Protection Association (NFPA) typically publishes and begins distribution of a new Code edition (2008) in mid-September of the previous year (2007).

In November 2007 we will publish a Special Edition of this newsletter detailing all aspects of the revision process, including selection of the rules Technical Advisory Committee (TAC). The approximate timelines for rule revisions and proposed 2008 NEC adoption are as follows.

October 2007—File CR 101 – pre-proposal statement of inquiry
January 1, 2008—Revision submittal form will be posted on the Electrical Web site
January 1 – March 31, 2008—Receive revision proposals from the industry (91 days only – no early or late proposals will be accepted)
March 1 – 31, 2008—Accept applications for TAC membership
Sometime Between April 1 – June 30, 2008—Convene general TAC meeting(s) (as necessary)
July 2008—Review of rule proposals by the Electrical Board
August 2008—File CR 102 – rule filing (opens the public comment period)
September 2008—Public hearings
October 2008—File CR 103 – Rulemaking order (adoption)
December 2008—Rules effective – possible adoption of 2008 NEC

All official announcements in this process are posted first on the Electrical Listserv. Listserv members also receive automatic e-mailings of this newsletter on the first day of publication. Join the Listserv at:
http://www.lni.wa.gov/Main/Listservs/Electrical.asp

● WAC Rule Revisions In Progress – Temporary Fee Reductions

The electrical fees you pay comprise the dedicated electrical fund. This fund completely supports the electrical licensing, certification, and inspection programs. The existing 5% temporary fee reduction has been extended another year until December 31, 2008. These rule revisions keep the temporary reductions in WAC 296-46B-905 and -910 in place. This extension will become effective approximately November 1, 2007.

The electrical program is only allowed to spend a fixed amount allocated from this dedicated fund by the legislature to support all of our operations. Unlike a typical business, fee revenue in excess of the legislature's allocation cannot be used to improve services or create additional positions. It is appropriate that we try to maintain a "revenue neutral" fee structure to keep your costs down. We will honor this commitment to our customers and continue to advocate any fee reductions the electrical fund balance allows.

● Information About The Use Of Class B Inspection Labels (Including Schools)

In issues raised during our May electrical inspector training sessions, we were asked to address the use of Class B inspection labels for Class B eligible work done in schools (educational occupancies). Class B cannot be used on jobs where plan review is required. The previous versions of WAC 296-46B required plan review of all work in schools, either at the local office or formal review in Tumwater, depending on the scale of the project.

In the current rules (December 2006 printing) WAC 296-46B-901(15) language was restructured to clarify the threshold for small modifications to existing installations that **do not** require plan review. Some examples of these are:

- Net load reduction lighting efficiency retrofits.
- Low voltage systems.
- Branch circuit modifications involving load increases of < 5% on distribution equipment rated ≤ 400 amps and 250 volts (excluding all NEC 700 emergency system equipment).

If the work does not require plan review **and** is within the limitations of Class B work in WAC 296-46B-900(26), then Class B inspection labels may be used. Typical situations:

- A single-outlet extension, from an existing 20 amp, 120 volt circuit, is done in each of many classrooms. A Class B label is required for each classroom.
- For other than fire alarm systems, a single Class B label could be used for a limited energy system installation in an entire school.

For all eligible Class B work, if the contractor cannot complete the work in the 15 working days given to return their portion of the label to us, they should be prepared to pay a trip fee(s) for any additional random inspections done after the initial 15 days.

● New Web Page: "What You Should Know About Appliance Installation And Repair"

At the request of legitimate Appliance Repair (07D) specialty electrical contractors, we have created a page on our web site with the title (above) in this article heading. Initial installation of a household appliance is always the responsibility of the electrical contractor providing the new circuit (i.e. the circuit designer) for the appliance. Initial installation of hard-wired electrical appliances is not in the scope of the Appliance Repair (07D) specialty. Typically, appliance **replacement** and **repair** is under the control of the homeowner. We decided the most appropriate and effective place to locate the link to access the new page is on the existing "Homeowner Basics" page at:

http://www.lni.wa.gov/TradesLicensing/Electrical/BasicElectInstall/default.asp

● Electrical Question of the Month

This Month's Question: The total calculated service load for a 12-unit multifamily dwelling building is 137,500 VA. The contractor will feed each unit with a 120/208 volt single phase feeder originating from a three phase service. Using the standard calculation, what is the calculated load in amps on the service phase conductors? **A)** 1146 amps, **B)** 661 amps, **C)** 382 amps, **D)** 286 amps.

Last Month's Question: A Class B label can be used for replacing a 240v, 110A furnace. True/False? The answer is: **False)** [WAC 296-46B-900(26)(a)(ii)(D)].

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ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 7** **July 2007**

L&I To Do Electrical Inspections For The Suquamish Tribe

An agreement has been reached for the L&I Electrical Program to do electrical inspections and enforce Washington's licensing laws for the Suquamish Tribe. The agreement includes all electrical contractors and individual owners doing electrical work on the Port Madison Indian Reservation. Effective immediately, anyone doing electrical work on the Suquamish reservation should buy an L&I electrical permit for any electrical work they are beginning. Permits must be obtained prior to beginning your electrical work. Electrical contractors should follow all Washington laws for electrical licensing, supervision of electrical trainees, etc. L&I is committed to providing the best possible electrical inspection service to the Suquamish Tribe.

You can buy your electrical permit at the Bremerton L&I office or on-line at:
http://www.lni.wa.gov/TradesLicensing/Electrical/FeePermInsp/default.asp

Upcoming Stakeholders Meetings

Upcoming stakeholder meetings will run from September 2007, through June 2008, throughout the state. Other upcoming meeting locations and times will be published in future *Electrical Currents* articles. Attending your local stakeholder meeting will help you stay informed and provide your input about the electrical industry in Washington and your local area.

September Electrical Stakeholders Meetings

September 24, 2007	PUD No.1 of Douglas County East Wenatchee Headquarters Office 1151 Valley Mall Parkway East Wenatchee, WA	6PM - 9PM
September 25, 2007	Spokane Community College, Lair Bldg. Sasquatch Room, Spokane. **Parking passes are required.** Pick up a parking pass at either the Spokane service location or print one from the following web page: http://www.lni.wa.gov/tradeslicensing/electrical/whatsnew/calendar/default.asp	6PM - 9PM
September 26, 2007	City of Pullman, 325 SE Paradise St., Pullman	6PM - 9PM

Where Are "Hospital Grade" Receptacles Required?

To adequately protect patients, health care facilities have very specific standards of installation that are often substantially different from a typical electrical installation. National Electrical Code (NEC) 517, Health Care Facilities, has special requirements for "patient care" areas (e.g. redundant grounding/bonding, insulated copper equipment grounding conductors in metal raceways, hospital grade MC or AC cables, receptacle requirements, etc.).

NEC 517.2 defines a "patient bed location" as a general or critical care inpatient sleeping bed or the bed/procedure table used in a critical care area. NEC 517.2 also defines "critical care area" as an area where a patient is subjected to an invasive procedure and connected to a line-operated electromedical device. The definition describes: operating rooms, delivery rooms, etc. Although not included in the NEC examples, dental chairs and other locations where an invasive procedure is performed and the patient is connected to a line-operated electromedical device are considered to be "critical care."

NEC 517.18(B) requires that listed "hospital grade receptacles" be used in general care area patient bed locations, and NEC 517.19(B) requires that "hospital grade receptacles" be used in critical care patient bed locations. Critical care locations must be identified by the facility operator. On plan reviewed jobs, these will be identified on the approved plans. On jobs not requiring plan review, the inspector will ask the facility operator if the facility has any critical care procedure tables or patient bed locations.

Installers should also be aware the medical equipment manufacturers may also have specific requirements. Examination tables and dental chairs, for example, often have a manufacturer requirement that a "hospital grade" receptacle supply power to the table or chair.

If you are working in a NEC 517, health care facility, you should review previous *Electrical Currents* articles written in July 1998, November 1998, May 1999, January 2005, and August 2005. These articles are available online:

http://www.lni.wa.gov/TradesLicensing/Electrical/WhatsNew/Currents/default.asp

● Improperly Filled Out Class B Permits Will Result In A Citation

Contractors have recognized the advantages of using Class B inspection labels. There were about 37,000 Class B labels used this past year. The Class B process has saved contractors, their customers, and electrical inspector's time and money.

Class B work is restricted to electrical work that requires minimal modification to the electrical circuit and has limited exposure to electrical hazards. The use of the Class B label is restricted to electrical contractors and approved businesses that have full-time certified electricians on staff.

Class B labels must be applied prior to beginning the electrical work and returned to L&I within fifteen days after posting the jobsite portion of the label. We have had problems with the way some contractors and electricians have filled out the required information on the labels. Both the contractor and the installer have responsibility to ensure the required information is accurate and complete.

Both portions of the label should be filled out at the same time prior to beginning the work. The information on each label should match. **The following information must be complete and accurate:**

- **Date of Work**
- **Electrical Contractor's Name**
- **Electrical Contractor's License # –** The contractor's license number, not the administrator's.
- **Electrician Certificate # –** The electrician's certificate of competency number, not the administrator's certificate number.
- **Site Address** – The actual street address of the jobsite where the Class B label is posted.
- **City, County, In City Limits Y/N, Power Company –** Do not leave any of this information blank.
- **Jobsite owner's name and phone # –** This information is necessary for L&I to arrange the possible inspection. The phone number should be a daytime number for the person whom we will contact to arrange access for the inspection.
- **Description of work –** The description given by the electrician must clearly identify that the work is eligible for the Class B random inspection process. The description must be specific enough to allow the inspector to identify and find the work that was done. The following are actual examples of ineligible, incomplete, or ambiguous descriptions that we have received:

Ineligible Work	Incomplete/Ambiguous Description
New furnace	Ceiling fan
Dedicated 20A circuit	Push-Pull
Whole home HVAC install	HP
New circuit to swimming pool heater	Hang light fixture
Etc.	Etc.

An example of an acceptable "description of work": "Extend ckt. #4, two outlets, N. wall dining room."

Your failure to properly post, fill out, and return the Class B labels will result in voiding the label, will require additional inspections of your Class B installations and cost you inspection money. You may also receive a citation for improper use of the label. Please familiarize yourself with all the Class B opportunities and responsibilities by studying WAC 296-46B-900 (20) through (26).

● Question of the Month

This month's question: A Class B label can be used for replacing a 240v, 110A furnace. True/False

May question was: The grounded conductor of a 12VDC circuit in a photovoltaic output circuit can be what color? **A**) Black, **B**) White, **C**) Green, **D**) No Requirement. The correct answer is **B** (NEC 200.6)

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector Vol. 10 No. 6 June 2007

Generator Transfer Switch Options

Optional Standby Systems Are A Good Way To Keep The Lights On

Power outages can occur at any time and may last for a prolonged time. Anyone, who has endured a power outage, especially one that lasted more than a few hours, may be highly motivated to install an electrical generator to avoid a repeat experience.

To prepare for these expected power outages many people choose to purchase an optional standby system for their home or business. **Optional standby systems** also called "**back-up generators,"** are often installed to provide an alternate source of "on-site generated power" for residences, industrial and commercial buildings, and farms. You can restore power manually or automatically. Whether a small portable gasoline or a large diesel powered stationary generator, all back-up generator systems have the same purpose, to deliver safe usable electricity when and where it is most needed.

The Department of Labor and Industries has the responsibility of ensuring the safe delivery of all electrical power within every home and business. One thing all back-up generator systems have in common is the need for a way to transfer the power source from the utility to your generator. We will explore the various transfer switch options available for back-up generator systems within a home.

How will the generated electricity get from the generator to the electrical equipment that needs the power? When considering the installation of a back-up generator system the generator is only part of the equation.

The simplest back-up generator configuration might be to purchase a small inexpensive portable generator that delivers its electrical energy through an extension cord directly to specific pieces of equipment (e.g. refrigerator, freezer, microwave, portable room heater, lamps, etc.). The advantage of this type of installation is its low cost and flexibility; however, the electrical loads that may be connected are very limited. When you need to have generator power for permanently connected electrical equipment (e.g. furnace, oven, water heater, etc.), you must have a more sophisticated and permanent back-up generator wiring system. If you fail to properly install your back-up generator system, you and your family are at significant risk from suffocation, electrocution, and structural fire.

There are many types and sizes of back-up generators, and many variables to consider when installing your back-up generator system. Each size and type of back-up generator has different wiring connection requirements.

Stationary Optional Standby Generator

Portable Optional Standby Generator

- **Transfer Switches Are An Essential Part Of All Back-up Generator Systems**

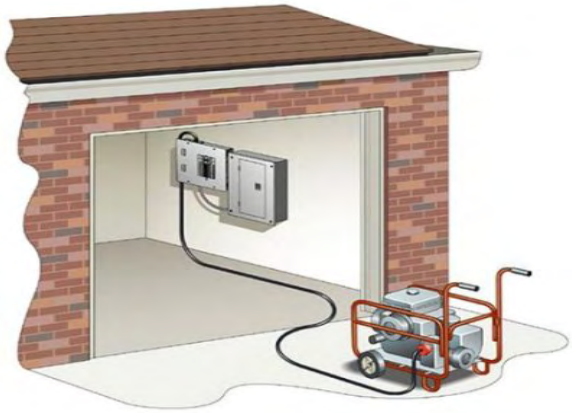
Generally, a "**transfer switch**" is a device designed to supply power to an electrical circuit from multiple power sources. A transfer switch is required for any back-up generator other than a portable back-up generator that uses an extension cord to supply single electrical loads like your refrigerator or a lamp.

A transfer switch is necessary to isolate the generator from the utility system when you install a back-up generator to your house's wiring system. Failure to properly transfer your power places you, your family, and utility workers at great risk of electrocution. Connecting a generator directly to any point of the home's electrical wiring without a transfer switch is illegal and dangerous due to the possibility of "back-feeding." Back-feeding happens when you connect your back-up generator directly to the home's wiring without having a legal transfer switch.

Without a legal transfer switch, your generator's electricity can be sent back into the power grid from your house. This will energize the utility's power lines in your street. This poses an electrocution hazard for utility workers and your neighbors who may not know that your voltage is present on the shared lines. If utility power is restored, your back-up generator and house wiring may be severely damaged.

- **Transfer Switches Can Be Manual, Automatic, Or A Combination Of Manual And Automatic**

Transfer switches can be manual or automatic and switch between multiple power sources. They can be very simple or very sophisticated in design and operation. They can send power to a single circuit or can be part of a panel that supplies multiple circuits. If your transfer switch is rated as *"Suitable for Use as Service Equipment,"* it will be considered to be your service disconnect and may be installed in your electrical system upstream from your electrical panel's main circuit breaker. Installing your transfer switch ahead of your main breaker will require some modifications to the wiring in your current service panel. Because of the complexities of wiring your transfer switch this way, you will likely need electrical experience yourself or you may need to hire a licensed electrical contractor to make the installation.



Manual Transfer Switches (MTS) are generally the least expensive and least complicated of the two types of transfer switches. MTS's require someone to be on-site to start and shut down the generator and physically operate the MTS. Manual transfer switches come in various sizes and different configurations to suit your specific application. Both portable and stationary generators may use manual transfer switch equipment.

Automatic Transfer Switches (ATS) monitor the power supplies and automatically switch from the normal (utility) supply over to the generator supplied power source in the event of a power outage.

ATS equipment can have many different control and alarm features. An ATS, with built in logic, can monitor the utility power, sense any power disruptions, and switch to an alternate power source. Some ATS equipment can even start and stop the generator on a predetermined maintenance schedule to assure the back-up generator works when you need it. In the event of a utility power failure, it is common for an ATS to automatically start your back-up generator and transfer your power source from the utility to the generator. When utility power is reestablished, the ATS will automatically transfer back to the normal supply and shut the generator down. Because of the complexities of using an ATS, we will not discuss their use in this article. If you want an ATS, you should probably hire a licensed electrical contractor to make your installation.

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● Adding A Transfer Switch To Your New Or Existing Electrical Panel

If you are planning to add a transfer switch to your electrical system, there are several types and configurations available in the market to choose from. When choosing which piece of equipment is best for you, a transfer panel may be the logical choice. When you are buying your back-up generator and transfer switch, you must consider the voltage and amperage of the electrical loads you want to run. Some typical 120 volt loads in your house are: 1,500 watt – refrigerator, 75 watt – one lamp, 1,500 watt – microwave. If you are unsure what size back-up generator or transfer switch equipment to buy, you should consult a qualified electrical contractor or retail outlet.

● There Are Several Ways To Install Your Transfer Switch

Installing an **aftermarket interlock accessory** kit is one of the least expensive ways to incorporate a transfer switch into your existing electrical system. Several panelboard manufacturers offer accessory kits designed to allow you to convert your existing electrical service panel to a sub-transfer service panelboard. Kits typically consist of a generator receptacle outlet, a circuit breaker suitable for back feeding, and a mechanical interlocking device (attached to the dead front cover of your existing service panel). Only use an interlock kit approved for your existing panelboard. Using another brand is extremely unsafe and could cause your family to be electrocuted or major damage to your house's electrical system.

Picture Courtesy of Generator Interlock Technologies

A **multi-circuit manual transfer switch panel** is compatible with small portable generators that are typically 5,000 watt (5 kilowatt) or smaller back-up generators. This common size back-up generator is usually available for purchase at most retail stores and is a good option for houses with an existing electrical panel. The installation of the multi-circuit manual transfer switch panel is relatively simple to other types of transfer switching methods, requires minimal changes to your existing wiring, and there is minimal interruption to your house's electrical power while making the installation. Multi-circuit manual transfer switch panels commonly come in 6, 8 and 10 circuit models. You can install them on the wall surface or flush in the wall next to your service panel. They come with a pre-wired wiring harness that connects directly into your existing panel. Inside your existing panelboard, you must splice the harness into any existing circuits you want to power from your back-up generator.

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The multi-circuit manual transfer switch panel comes with provisions to plug a power cord from your back-up generator into the front of the panel. As with other types of transfer switch panels, accessories are available to relocate the power inlet connection to a place outside the home avoiding the need to run a power cord from the generator to the transfer switch through a door or window.

A **transfer sub panel** is a good option for either new or existing electrical system installations. Installing a transfer sub-panel can accomplish many of the same goals as the use of a main transfer panel without some of the disadvantages. If incorporated into an existing home this option may involve some re-wiring of the existing service panel.

The transfer sub-panel is usually smaller than a main transfer panel, but is essentially identical to it in design and arrangement of circuit breakers. A standard circuit breaker in your existing panelboard feeds the "normal power" to your transfer sub-panel. You will connect two back-fed circuit breakers in your transfer sub-panel to your normal supply and back-up generator. You should size your back-up generator to carry the loads you need to operate.

If you are using a transfer sub-panel, you will not have to replace your existing legally installed service panel and you can choose your critical circuits in advance so you will not need to make circuiting decisions when you transfer power to your generator. You can leave all your branch circuits "ON."

A **main transfer panel** is one way to connect your back-up generator into your electrical system. The transfer panel is nearly identical in appearance and function to a typical house main panel. A transfer panel uses a back-fed circuit breaker to control power from your back-up generator and has a manual locking device that you must operate to shift from utility power to your generator. The main circuit breaker is usually located close to the back-fed generator breaker and cannot be closed if the manual locking device has been shifted to allow power from your back-up generator. The locking device prevents both breakers from being closed at the same time. This safety feature prevents back-feeding to the utility system and endangering utility workers and your electrical system.

This type of system requires removing and replacing your existing service panel, but there is generally no need for other extensive electrical work. If your back-up generator is not large enough to power all your circuits simultaneously, you will need to turn off enough of your branch circuit breakers in advance of transferring power so that you do not overload your back-up generator.

Pictures Courtesy of Eylander Corporation

● For Your Family's Protection – Be Aware

Transfer equipment is available that is not approved. All electrical equipment must have an appropriate **approval label** from a Washington approved electrical testing laboratory. It is very unsafe to use equipment that is not approved or properly installed and puts your family and utility workers at significant risk from electrocution. This type of electrical work **always requires a permit and an inspection** by your local electrical inspector. **Do not place anyone at risk from an improper electrical installation**. If you are at all **unsure of what you are doing, hire a licensed electrical contractor** to make your installation. Our electrical website has a list of licensed electrical contractors. They are properly bonded and qualified to do your job safely and economically.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 5** **May 2007**

Class B Label Requirements

All fields on a Class B Label must be legible, accurate and complete. Any Class B Label improperly filled out is not a valid permit and is subject to a warning or citation. The jobsite portion of the label must be affixed on the jobsite prior to beginning any electrical work.

The electrician performing the electrical work is required to record his/her valid certification number on both portions of the Class B Label and return the "Contractor's Portion" to Labor and Industries within 15 days of starting of work. Random audits by Labor and Industries revealed that some contractors have been recording their assigned administrator's certificate on Class B Labels, instead of the installer's certificate number. This is a violation. The label must be signed by the person doing the electrical work. **Master and master specialty electricians may do electrical installations; administrators cannot do electrical work**.

It is essential to record an accurate contact phone number on the permit, so we can arrange access for the inspector to make the electrical inspection. If the contact phone number is not accurate or reliable, the contractor will become responsible to coordinate the necessary access. If you are a contractor that uses Class B Labels, please review these requirements with your employees.

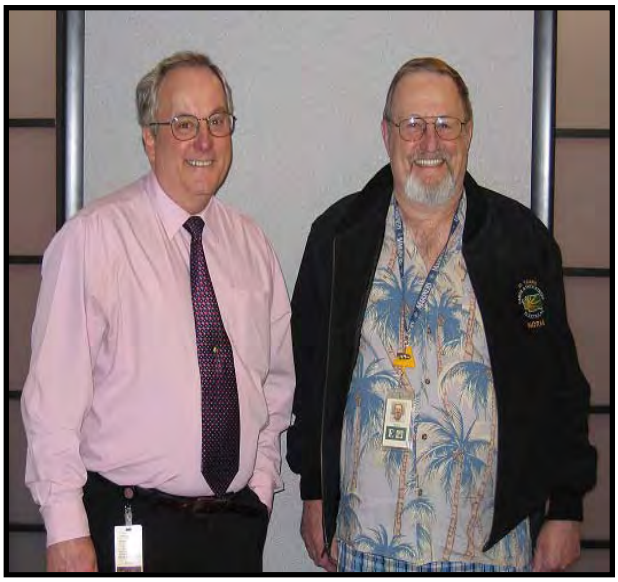
Unsupervised Trainees and HVAC Thermostat Cable

WAC 296-46B-965 (15) Electrical trainees may work unsupervised when installing HVAC/R thermostat cable when the HVAC/R system consists of a single thermostat in one- and two- family dwelling units where line voltage power has not been connected to the dwelling's electrical system.

Electrical trainees working for a properly licensed electrical contractor may install the low voltage thermostat cable prior to the utility's connection to the residence. This unsupervised work can only take place during the low risk rough-in phase of a new home or duplex.

While the use of a Class B Label for the unsupervised installation of the thermostat cable by a trainee is allowed, the trainee certificate number must be recorded as the installer. This is the only time a training certificate number may be recorded on a Class B Label.

Norm Williams Celebrates 30 Years With The State of Washington



Plans Examiner Norm Williams, (on the right with Chief Electrical Inspector Ron Fuller) has led an interesting and diverse career in the electrical industry.

Norm came to Washington from Florida as a journeyman electrician in 1976. He began his career working for the Department of Corrections as an Electrical Maintenance Supervisor in Shelton, in 1977.

In 1983, Norm transferred to Labor and Industries and began working as both a Contractor Compliance Officer and Factory Assembled Structures Plans Examiner. He held this position for the next twenty years until 2003. During an interim period in 2002 Norm helped stabilize the industry by accepting a six month position as acting Contractor Registration Chief. In 2003 we were fortunate to have Norm accept a position in the Electrical Program as an Electrical Plans Examiner.

"We are lucky to have someone like Norm with the program. His knowledge and history in the industry and the electrical program is irreplaceable," states Chief Fuller. Norm was presented with a jacket and a certificate of appreciation signed by Director Schurke and Governor Gregoire. Congratulations Norm!

● Exemptions for Manufacturers of Electrical/telecommunication Products

Question: May an unlicensed manufacturer representative make electrical alterations to their own field installed equipment without obtaining a permit?

Only if done in compliance with WAC 296-46B-925(21).

Manufacturers of electrical or telecommunications systems products are allowed to utilize a manufacturer's authorized factory-trained technician to perform initial calibration, testing, adjustment, modification incidental to the startup and checkout of the equipment, or replacement of components within the confines of the specific equipment, without permit or required licensing. Modifications to the equipment may not include any changes to the original intended configuration or changes or contact with external or field-connected components or wiring. The manufacturer is responsible for obtaining any required re-approval/recertification from an approved listing or field evaluation laboratory. The **manufacturer must notify the department** if any modifications have been made to the equipment or if re-approval/recertification is required.

Though manufacturers are allowed to limited work on their equipment without obtaining permits or licensing, the scope of work for their field technicians is very limited. These (factory trained) technicians may only work on equipment for which they are an authorized manufacturer's representative.

● Concerts, Stage, and Similar Live Performance Events Utilizing Portable Equipment

The production services industry is normally responsible for temporary electrical installations at concerts, sporting, theatrical or similar live performances. Their electrical systems typically include portable stage and studio lighting, sound, audio-visual effects, and power distribution equipment and cabling. Their electrical systems, electrical equipment, and conductors are supervised by qualified personnel, and barriered from the general public, NEC 520 and WAC 296-46B-520 will be used as the base for inspections. Any portion of the system that is not adequately barriered from the public will be inspected under NEC 525.

● Electrical Question of the Month

This Month's Question: The grounded conductor of a 12VDC circuit in a photovoltaic output circuit can be what color? **A)** Black, **B)** White, **C)** Green, **D)** No requirement

Last Month's Question: The rating of the required disconnecting means for each ungrounded conductor of a capacitor bank shall not be less than ____% of the rated current of the capacitor.

A) 100%, **B)** 115%, **C)** 125%, **D)** 135%. **The correct answer is D (NEC 460.8 (c))**

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Final Judgments of Electrical Laws
For the 1st Quarter of 2007

Violator		Penalty
Violation – No Electrical Contractor's License		
Region 1 – North Puget Sound		
A A PLUMBING LLC, VISTARAMA AVE, EVERETT WA	$	500
A COMPLETE OFFICE INSTALLATION, SE 198TH ST., RENTON WA	$	500
ALBERTO SERVICES, AUBURN WAY S, AUBURN WA	$	500
ANDERSON, MICHAEL, PARK STREET, BELLINGHAM WA	$	500
ASAP HEATING, A/C & APPLIANCE LLC, NE 128TH STREET, KIRKLAND WA	$	250
C R FLOORS NORTH INC, SMOKEY POINT BLVD, MARYSVILLE WA	$	1,500
CAMWEST DEVELOPMENT, 183RD ST SE, BOTHELL WA	$	500
CONSTRUCTION EQUIPMENT MAINT. INC., 157TH AVE SE, SNOHOMISH WA	$	500
D A L CONSTRUCTION, 196TH PL NE, WOODINVILLE WA	$	500
DARITECH INC, BENSON RD, LYNDEN WA	$	1,500
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	500
DREAMTECH, S 336TH ST., FEDERAL WAY WA	$	500
EXTREME SECURITY, STATE ROUTE 92, LAKE STEVENS WA	$	33,000
HY-TEC CUSTOM HYDRONICS, AURORA AVE N, SEATTLE WA	$	500
ISLAND SIGNS & DESIGNS, PELTER DR, POINT ROBERTS WA	$	500
JACKSON, RICHARD, PO BOX, EVERSON WA	$	500
JUNEVITCH CONSTRUCTION, SE 216TH ST, MAPLE VALLEY WA	$	2,500
MATRIX ENERGY SERVICES, GOODWIN WAY NE, SEATTLE WA	$	500
RENTAL READY, N 128TH ST, SEATTLE WA	$	500
ROBKO CONSTRUCTION, BARING WAY, EVERETT WA	$	500
SITE WISE LLC, JIM CREEK RD., ARLINGTON WA	$	500
SPECIALTY PUMP & WELL INC, 152ND ST SE, SNOHOMISH WA	$	500
SPEER, JEREMY, 199TH ST. S.E., BOTHELL WA	$	500
SPRINGER, TODD, 84TH ST NE, LAKE STEVENS WA	$	500
STAYBRIGHT ELECTRIC, CALLE HERMOSA, CAPISTRANO BEACH CA	$	750
SUSHCH, VICTOR, OREGON TRAIL, MAPLE FALLS WA	$	500
THE SIGN POST INC, E. BAKERVIEW RD, BELLINGHAM WA	$	500
THOMAS, CRAIG, MARINE DR., BELLINGHAM WA	$	500
THOMAS, DONALD, 108TH ST SE, EVERETT WA	$	500
Region 2 – King County		
BEACON PLUMBING & MECHANICAL, INC., SE 149TH ST., RENTON WA	$	500
BEIMDIEK, ROBERT, 215TH ST SW , SNOHOMISH WA	$	500
BUILDING MECHANICAL SERVICE INC., SE 416TH, ENUMCLAW WA	$	500
C & L GAMES INC, 84TH AVE S, KENT WA	$	50
DESIGN ELECTRIC, MANANA RD, DALLAS TX	$	4,000
DREAMTECH, S 336TH ST, FEDERAL WAY WA	$	500
DTT SURVEILLANCE, N MAIN ST., LOS ANGELES CA	$	500
EXTREME SECURITY, STATE ROUTE 92, LAKE STEVENS WA	$	4,500
GHEZZI, TIMOTHY, 11 AVE NE, SEATTLE WA	$	2,000
HACT CONSTRUCTION CORP, 188TH ST SW, LYNNWOOD WA	$	500
HANDYMAN GENERAL SERVICES, N 101 ST, SEATTLE WA	$	500
IRWIN, MICHAEL, NE 98TH COURT, REDMOND WA	$	500
LIGHT OF THE WORLD ELECTRIC, CANYON RD. E., PUYALLUP WA	$	500
LINDBLOM, BRENT, 35TH AVE SW, SEATTLE WA	$	500
LU, KEN, 16TH AVE S, SEATTLE WA	$	500
M Z CONSTRUCTION LLC, KIRKWOOD PL N, SEATTLE WA	$	500
MARTIN, DEAN, 59TH AVE SW, SEATTLE WA	$	500
MASTERBUILT ESTATE HOMES INC, 212TH AVE SE, MAPLE VALLEY WA	$	500
MR HANDYMAN / N LAKE WASHINGTON / BELL, 37TH AV NE, LAKE FOREST PARK WA	$	500
PAK-RITE EQUIPMENT LLC, RIVERVIEW ST, EAGLE ID	$	500
POWER VAC ENTERPRISES, PO BOX, TACOMA WA	$	500
RICHARDS, DOUGLAS, 61ST AVE NE, KENMORE WA	$	3,000
SPECIALTY DOOR SERVICE INC, 55TH AVE WEST, MOUNTLAKE	$	500

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TERRACE WA		
STACHOWIC, DEBORAH, S BENNETT ST, SEATTLE WA	$	1,500
STIMACO CONSTRUCTION, 116TH AVE SE, TACOMA WA	$	500
VOLZ, JAY, 225TH PLACE SE, MAPLE VALLEY WA	$	500
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
AA SIDE X SIDE, SW 372ND ST., FEDERAL WAY WA	$	500
BEST BUY, RIDGETOP BLVD N W, SILVERDALE WA	$	500
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	1,500
E-Z ELECTRIC INC OF OREGON, PO BOX, MEDFORD OR	$	42,000
FROLOV, VICTOR, PACIFIC AVE, TACOMA WA	$	500
KEYLON, CLYDE, 337TH ST. S., ROY WA	$	375
LENT MECHANICAL LLC, STATE HIGHWAY 3 SW, PORT ORCHARD WA	$	500
MAINTENANCE PLUS+, S FAWCETT AVE, TACOMA WA	$	500
PAUL, MICHELLE, 15TH AVE S, SEATLE WA	$	500
ROBERTS, JOHN, KIOWA TRAIL, FOX ISLAND WA	$	250
STAYBRIGHT ELECTRIC, CALLE HERMOSA, CAPISTRANO BEACH CA	$	250
Region 4 – Southwest Washington		
ANDERSON GROUP INTERNATIONAL, TYINN #24, EUGENE OR	$	500
BEARDSLEY, CHARLES, E STREET, VADER WA	$	500
BEE ELECTRIC, PO BOX, BEAVERTON OR	$	500
BELL HEATING, S.E. PIAZZA AVE., CLACKAMAS OR	$	500
CHRISTOPHER, ROBERT, CAMBRIDGE LANE, OLYMPIA WA	$	250
CLEMENTS, TOM, PETERS STREET, RAYMOND WA	$	500
COLEMAN, BRUCE, N. E. 12TH AVE, VANCOUVER WA	$	500
COOL HEAT SOLUTIONS, PO BOX, VANCOUVER WA	$	500
D B CONSTRUCTION, OCTOPUS AVE, OCEAN SHORES WA	$	500
DAHLE, AARON, HOLGATE LN., CHEHALIS WA	$	500
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	500
DUNRITE MECHANICAL LLC, NE 132 AVE, BATTLE GROUND WA	$	1,000
FLOWERS, JERI, NW 10TH AVE, VANCOUVER WA	$	500
HARTFORD, DUANE, PO BOX, SATSOP WA	$	500
HAUSSERMAN, DENNIS, PO BOX, KALAMA WA	$	500
HOME ALLY LLC, SE 131ST AVE, VANCOUVER WA	$	1,000
KEVIN B EAGEN DBA KNG SERVICES, NW 71ST AVE, RIDGEFIELD WA	$	500
M H C HEATING & COOLING, PO BOX, PORTLAND OR	$	500
M JUHOLA INC., FARGER GARDEN CT., YACOLT WA	$	500
PRIETO, JOHN, OLD PACIFIC HWY S.E., OLYMPIA WA	$	1,000
ROGER'S HANDYMAN SERVICE, NE 121 AVE, VANCOUVER WA	$	500
STAYBRIGHT ELECTRIC, CALLE HERMOSA, CAPISTRANO BEACH CA	$	500
TEAM PERFORMANCE, N. KINGS RD., NAMPA ID	$	500
VIKING HEATING INC, PO BOX, GRESHAM OR	$	1,500
Region 5 – Central Washington		
ABSOLUTE COMFORT LLC, MOUNTAINVIEW AVE., YAKIMA WA	$	500
ALL RIGHT CONSTRUCTION AND ELECTRIC, PO BOX, PASCO WA	$	500
ALLSTAR ELECTRIC INC, W. NOB HILL BLVD., YAKIMA WA	$	500
AUDIO SPECIALISTS INC, N 41ST AVE, YAKIMA WA	$	500
AUSERE, LEO, MOUNT DANIELS RD, WEST RICHLAND WA	$	500
AVILA, JOSE, SPARROW RD, CONNELL WA	$	1,500
CHILDS, RON, S. KELLER ST., KENNEWICK WA	$	500
CHINI, JOE, WEST 10TH, ELLENSBURG WA	$	500
CUSTOM WORKS, HAWORTH RD., PASCO WA	$	500
DAN'S BACKHOE SERVICE, SWANSON GULCH ROAD, MANSON WA	$	500
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	1,500
DIAMOND CONSTRUCTION, N 8TH ST, YAKIMA WA	$	500
DLT / PARAGON CONSTRUCTION, PO BOX, WAPATO WA	$	500
EXCEL DAIRY SERVICES INC, OLD HWY 99 SOUTH, MOUNT VERNON WA	$	1,500
MCSHARRY, TYLER, BIRCHFIELD RD., YAKIMA WA	$	500
RISE, JEFFREY, N 17TH AVE, PASCO WA	$	500
SAMS MAINTENANCE& REPAIR, BLUE ST., RICHLAND WA	$	500
SMITH, STEVE, PASCO KAHLOTUS RD., PASCO WA	$	250
WENTZ, MARTY, PLEASANT AVE., GRANDVIEW WA	$	500
Region 6 – Eastern Washington		

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AIRPLANE HANGER BUFFS ASSOCIATION LLC, N. CEDAR AVE, DEER PARK WA	$	500
ATLAS SIGN, , AVENUE L, WEST PALM BEACH FL	$	500
B & B POOL CLEANING SERVICE, 13TH STREET, LEWISTON ID	$	500
BAKER, SANDON, E SHARPSBURG AVE, SPOKANE WA	$	500
BANUELOS, LARRY, 704 SUMMIT BLVD, SPOKANE WA	$	500
BASHAW, TIM, N ECHO GLENN LN, COEUR D ALENE ID	$	500
BASILE, MARK, 11 E RIVERSIDE AVE, SPOKANE WA	$	500
BURNETT, WAYDE, IRENE PL, CHENEY WA	$	500
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	1,500
EFFICIENCY PLUS HEATING AND A/C, E BROADWAY AVE, SPOKANE WA	$	500
GOODMAN, DAN, N WILSON, MEAD WA	$	500
K B M HANDYMAN SERVICES, W BUNKER RD, CHENEY WA	$	500
MARTIN, NICHOLAS, N LINCOLN, SPOKANE WA	$	500
PALMER, AARON, , SPOKANE WA	$	500
PICHETTE, THOMAS A, E 1212 PRINCETON, SPOKANE WA	$	500
ROSS, RICHARD, S SPRUCE, SPOKANE WA	$	500
ROSTIE & ASSOCIATES, W RIVERVIEW DRIVE, POST FALLS ID	$	500
SHERMAN, ROGER, PO BOX, MEDICAL LAKE WA	$	500
SUNRISE DEVELOPMENT NW INC, N HUETTER RD., COEUR D'ALENE ID	$	500
Central Office		
BARTON, RANDY, FASOLA RD, SEQUIM WA	$	1,000
RIS-NW INC, NORTHCREEK PKWY, BOTHELL WA	$	2,500
SECURITY ONE INC., S PINE ST, TACOMA WA	$	750
Violation – Hiring Uncertified Electricians		
Region 1 – North Puget Sound		
ANDERSON, MICHAEL, PARK STREET, BELLINGHAM WA	$	250
ASAP HEATING, A/C & APPLIANCE LLC, NE 128TH STREET, KIRKLAND WA	$	125
CAMWEST DEVELOPMENT, 183RD ST SE, BOTHELL WA	$	250
CONSTRUCTION EQUIPMENT MAINT. INC., 157TH AVE SE, SNOHOMISH WA	$	250
DARITECH INC, BENSON RD, LYNDEN WA	$	500
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	250
DREAMTECH, S 336TH ST., FEDERAL WAY WA	$	250
ETHAN ELECTRIC, AVENUE B, SNOHOMISH WA	$	50
EXTREME SECURITY, STATE ROUTE 92, LAKE STEVENS WA	$	1,000
HOME THEATRE SPECIALTIES, ASH WAY, LYNNWOOD WA	$	500
HY-TEC CUSTOM HYDRONICS, AURORA AVE N, SEATTLE WA	$	250
ISLAND SIGNS & DESIGNS, PELTER DR, POINT ROBERTS WA	$	500
POINTER ELECTRIC INC, RECTOR ROAD, BOW WA	$	250
R & S ELECTRIC, PO BOX, MARYSVILLE WA	$	500
SHORELINE ELECTRIC INC., AURORA AVE. N., SHORELINE WA	$	250
SITE WISE LLC, JIM CREEK RD., ARLINGTON WA	$	250
SPECIALTY PUMP & WELL INC, 152ND ST SE, SNOHOMISH WA	$	250
STAYBRIGHT ELECTRIC, CALLE HERMOSA, CAPISTRANO BEACH CA	$	375
THE SIGN POST INC, E. BAKERVIEW RD, BELLINGHAM WA	$	500
Region 2 – King County		
DESIGN ELECTRIC, MANANA RD, DALLAS TX	$	2,000
DIGITAL CINEMA DESIGN, 152ND AVE. NE, REDMOND WA	$	250
DREAMTECH, S 336TH ST, FEDERAL WAY WA	$	250
EATON ELECTRICAL SERVICES & SYSTEMS, S.E 30TH STREET, BELLEVUE WA	$	250
ELEMENT ELECTRIC, SE 38TH STREET, BELLEVUE WA	$	250
EMERALD AIRE INC, D ST NW, AUBURN WA	$	250
M Z CONSTRUCTION LLC, KIRKWOOD PL N, SEATTLE WA	$	250
MEREDITH, LEE, SE 195TH ST., RENTON WA	$	250
POWER VAC ENTERPRISES, PO BOX, TACOMA WA	$	250
S & E ELECTRIC, S CENTER ST, TACOMA WA	$	125
SIEMANS BLDG TECHNOLOGIES INC., SE 51ST ST., ISSAQUAH WA	$	250
SPECIALTY DOOR SERVICE INC, 55TH AVE WEST, MOUNTLAKE TERRACE WA	$	250

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TRITON ELECTRIC, PO BOX, SNOHOMISH WA	$	100
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
AA SIDE X SIDE, SW 372ND ST., FEDERAL WAY WA	$	250
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	500
KEN BOBKO ELECTRIC CO. INC., PO BOX, TACOMA WA	$	250
LENT MECHANICAL LLC, STATE HIGHWAY 3 SW, PORT ORCHARD WA	$	250
S & E ELECTRIC, S. CENTER ST, TACOMA WA	$	1,850
SECURITY ONE INC., 104TH ST CT S, LAKEWOOD WA	$	250
STAYBRIGHT ELECTRIC, CALLE HERMOSA, CAPISTRANO BEACH CA	$	125
WASHINGTON ENERGY SERVICES CO, THORNDYKE AVE W, SEATTLE WA	$	500
Region 4 – Southwest Washington		
ANCTIL SHEET METAL COMPANY, N WILLIAMS, PORTLAND OR	$	250
B C M CONSTRUCTION, NE PERRAULT DR, VANCOUVER WA	$	100
BELL HEATING, S.E. PIAZZA AVE., CLACKAMAS OR	$	1,000
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	250
FRITZ MECHANICAL, N.E. 237TH AVE, BATTLEGROUND WA	$	250
P B ELECTRIC INC, SE DOGWOOD LANE, OAK GROVE OR	$	250
R J ASHTON ELECTRIC LLC, PO BOX, VANCOUVER WA	$	250
SCHNEIDER HOMES INC, SOUTHCENTER BLVD, TUKWILA WA	$	100
STANLEY SECURITY SOLUTIONS INC, E 75TH ST, INDIANAPOLIS ID	$	250
STAYBRIGHT ELECTRIC, CALLE HERMOSA, CAPISTRANO BEACH CA	$	250
TEAM PERFORMANCE, N. KINGS RD., NAMPA ID	$	125
VIKING HEATING INC, PO BOX, GRESHAM OR	$	250
Region 5 – Central Washington		
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	750
DIAMOND CONSTRUCTION, N 8TH ST, YAKIMA WA	$	250
DLT / PARAGON CONSTRUCTION, PO BOX, WAPATO WA	$	250
DORSEY ELECTRIC INC, NE LINDWOOD ST, EAST WENATCHEE WA	$	500
EXCEL DAIRY SERVICES INC, OLD HWY 99 SOUTH, MOUNT VERNON WA	$	350
GRAYBEAL SIGNS, N WENATCHEE AVE, WENATCHEE WA	$	250
LESCO ELECTRICAL CONTRACTING INC., 9TH ST., PROSSER WA	$	1,250
MILLER AND SONS HEATING LLC, BAILEY RD, ZILLAH WA	$	250
MILLS JR., HOWARD, IOWA ST., BELLINGHAM WA	$	250
TRI-AIR HEATING & A/C INC, PO BOX, WEST RICHLAND WA	$	10,500
VACUUM SOURCE LLC, VALLEY MALL PARKWAY, EAST WENATCHEE WA	$	250
Region 6 – Eastern Washington		
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	750
EFFICIENCY PLUS HEATING AND A/C, E BROADWAY AVE, SPOKANE WA	$	300
HIDDEN RIVERS SPRINKLERS/WA INC, S HAZELWOOD ROAD, SPOKANE WA	$	250
Central Office		
ADVANCED ELECTRIC INC., NE 58TH STREET, VANCOUVER WA	$	500
DALES MAINTENANCE INC, DISHMAN MICA RD, SPOKANE WA	$	300
MAGNOLIA HI-FI INC., S 231ST STREET, KENT WA	$	1,000
SEQUOYAH ELECTRIC LLC, 134TH COURT NE, REDMOND WA	$	100
SIGNAL ELECTRIC, INC., PO BOX, KENT WA	$	100
SOUND HEATING & A/C INC, 184TH, PUYALLUP WA	$	500
UNITED ENERGY TECHNOLOGY, INC., S 341ST PLACE, FEDERAL WAY WA	$	200
UNITY ELECTRIC CONSTRUCTION INC., IRON COURT, SHASTA LAKE CA	$	250
Violation – Uncertified Electrician		
Region 1 – North Puget Sound		
ANDERSON, MICHAEL, PARK ST., BELLINGHAM WA	$	250
ASTLE, VICTOR, 116TH AVE, BELLVUE WA	$	250
BARNETT, TRAVIS, EAST COUNTRY CLUB DR., ARLINGTON WA	$	250
CRUSON, CHARLES, SE 198TH ST., RENTON WA	$	250
DOWNES, JESSE, 165TH PL. SW., LYNNWOOD WA	$	250
FOX, JONATHAN, JESS RD, CUSTER WA	$	250
HUTCHISON, JOSEPH, NE SUNSET BLVD, RENTON WA	$	125
IRIGOYEN, ALBERTO, S AUBURN WAY, AUBURN WA	$	250

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JAHANI, ALLEN, NE 126TH PL, KIRKLAND WA	$	250
JOHNSTON, PETER, W. BADGER, CUSTER WA	$	250
JUNEVITCH, TERRY, SE 216TH ST, MAPLE VALLEY WA	$	1,250
KAHL, DERIK, 204TH ST. SW, LYNNWOOD WA	$	250
LEANARD, JEROMY, RANCHO PL, EVERETT WA	$	250
LEVERETT, STEVEN, MAY CREEK PL, GOLD BAR WA	$	250
MARTENS, BRYAN, PACIFIC HWY, BELLINGHAM WA	$	250
MORGAN, FRED, PO BOX, FERNDALE WA	$	250
ODECHUK, VIKTOR, PICNIC POINT RD, EDMONDS WA	$	250
PETERSON, JEFFREY, 83RD ST SE, BOTHELL WA	$	250
ROBERTS, MICHAEL, BARING WAY, EVERETT WA	$	250
ROSSI, JEFFREY, NW CLIPPER DR, OAK HARBOR WA	$	250
SHEFFIELD, CHRISTOPHER, 31ST ST. NW, MARYSVILLE WA	$	250
SPAIN, LEONARD, AVENUE B, SNOHOMISH WA	$	50
SPEER, JEREMY, 199TH ST. S.E., BOTHELL WA	$	250
SPRINGER, TODD, 84TH ST NE, LAKE STEVENS WA	$	250
SUSHCH, VICTOR, OREGON TR., MAPLE FALLS WA	$	250
TAGGART, EVERETT, PALOMINO DR, BOTHELL WA	$	250
THOMAS, CRAIG, MARINE DR., BELLINGHAM WA	$	250
THOMAS, DONALD, 108TH ST SE, EVERETT WA	$	250
WHYTE, GORDON, 116TH ST SE, SULTAN WA	$	250
WIEDERSPOHN, JACOB, PO BOX, CUSTER WA	$	250
Region 2 – King County		
ALFLEN, KELVIN, PO BOX, TACOMA WA	$	250
AMIOTTE, BRIAN, MILWAUKEE AVE E, PUYALLUP WA	$	100
ANDERSON, JEREMY, 124TH AVE. SE, KENT WA	$	250
ANDRIE, MICAH, SE 38TH ST, BELLEVUE WA	$	250
FRED, RICHARD, SE 30TH ST, BELLEVUE WA	$	250
GEHRET, MATTHEW, 151ST AVE SE, RENTON WA	$	100
GHEZZI, TIMOTHY, 11TH AVE NE, SEATTLE WA	$	250
GOULD, GREG, SE 30TH ST, BELLEVUE WA	$	250
HA, CHU, 188TH SW, LYNNWOOD WA	$	250
HAUSER, TIMOTHY, 134TH AVE KPN, GIG HARBOR WA	$	250
KADINGER, DAVID, KIRKWOOD PL N, SEATTLE WA	$	250
NORWOOD, JOSH, 5TH AVE. SOUTH, SEATTLE WA	$	250
RICHARDS, DOUGLAS, 61ST AVE NE, KENMORE WA	$	500
ROBERT, BENJAMIN, NW MARKET ST, SEATTLE WA	$	100
SCHAIBLE, MARTIN, 84TH AVE S TRLR 88, KENT WA	$	250
SHEMEREKO, VASILIY, 6TH PL SW, FEDERAL WAY WA	$	250
THOMAS, STEPHEN, MINE HILL RD, ISSAQUAH WA	$	100
WEST, TIM, SW 334TH ST, FEDERAL WAY WA	$	125
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
AMIOTTE, BRIAN, 58TH ST CT E, PUYALLUP WA	$	250
GARRETT, JOHN, 148TH CT EAST, PUYALLUP WA	$	250
HATHHORN, RANDY, E. MAIN 29TH, PUYALLUP WA	$	250
KEYLON, CLYDE, 337TH ST. S., ROY WA	$	475
ROBERTS, JOHN, KIOWA TRAIL, FOX ISLAND WA	$	125
STANTON, JESSE, 132ND ST KPN, GIG HARBOR WA	$	750
ULREY, DON, 168TH AVE SE, KENT WA	$	500
WEST, TIM, SW 334TH ST, FEDERAL WAY WA	$	875
Region 4 – Southwest Washington		
BEARDSLEY, CHARLES, E STREET, VADER WA	$	250
BEECHER, PHILIP, SE DOGWOOD LANE, OAK GROVE OR	$	250
BRADFORD, ROGER, NE 121 AVE, VANCOUVER WA	$	250
CHRISTOPHER, ROBERT, CAMBRIDGE LANE, OLYMPIA WA	$	75
CLARK, DAVID, N WILLIAMS, PORTLAND OR	$	250
COLEMAN, BRUCE, N. E. 12TH AVE, VANCOUVER WA	$	250
DAHLE, AARON, HOLGATE LN., CHEHALIS WA	$	250
DURKIN, RON, CITRUS RD. SW, ROCHESTER WA	$	250
FAZIO, GARY, SE BRIARWOOD DR, VANCOUVER WA	$	250
GRIMSHAW, GREGORY, SE DEER MEADOW LOOP, DAMACUS OR	$	250
HARTFORD, DUANE, PO BOX, SATSOP WA	$	250

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HARTFORD, ROBERT, PO BOX, SATSOP WA	$	250
HUGHES, CLIFFORD, NE 112TH ST, VANCOUVER WA	$	250
JARVIS, KEN, 116TH AVE CT E, PUYALLUP WA	$	250
KROCKER, MIKE, S.W. PICASSO PLACE, PORTLAND OR	$	500
LOVELAND, JAMES, SCHAFFRAN RD., CASTLE ROCK WA	$	250
MARSTON, EDGAR, NE 11TH ST, VANCOUVER WA	$	250
MICHELSEN, AARON, SE 18TH LN, GRESHAM OR	$	250
PRIETO, JOHN, OLD PACIFIC HWY S.E., OLYMPIA WA	$	500
SAMPLE, TIMOTHY, N JOHNSON DR, PORTLAND OR	$	250
SIROTKIN, KONSTANTIN, NE 304TH AVE, WASHOUGAL WA	$	250
YAGOLNIKOV, GRIGORY, NW 11 CIR., CAMAS WA	$	250
Region 5 – Central Washington		
BELL, MATT, S WASHINGTON, DOWNEY ID	$	250
BENDZAK, BRAVEN, DURHAM RD, ZILLAH WA	$	500
CANDIDO, GIL, E EDISON, SUNNYSIDE WA	$	1,000
CHILDS, RON, S. KELLER ST., KENNEWICK WA	$	250
CHINI, JOE, WEST 10TH, ELLENSBURG WA	$	250
DE LA TORRE, JAIME, PO BOX, WAPATO WA	$	250
DEJONG, JARED, ORCHARD VALE RD, ZILLAH WA	$	500
EVERSON, MICHAEL, SENECA ST. S., WENATCHEE WA	$	250
GABEL, JASON, WESTWOOD, WENATCHEE WA	$	250
GARZA, FERNANDO, HAWORTH RD., PASCO WA	$	250
MCSHARRY, TYLER, BIRCHFIELD RD., YAKIMA WA	$	250
MILANEZ, ADAN, N BONE RD, PROSSER WA	$	250
RISE, JEFFREY, N 17TH AVE, PASCO WA	$	250
SCOTT, KENNETH, PO BOX, CASHMERE WA	$	250
SMITH, STEVE, PASCO KAHLOTUS RD., PASCO WA	$	250
Region 6 – Eastern Washington		
BASILE, MARK, 11 E RIVERSIDE AVE, SPOKANE WA	$	250
CUSHMAN, BILL, N. HILLTOP RD, COLBERT WA	$	250
DECHENNE, JEFFREY, N SMITH STREET, SPOAKNE WA	$	250
FIELDS, CHRISTOPHER, S STINER, COEUR D. ALENE ID	$	250
FOSTER, CLINT, PO BOX, DAVENPORT WA	$	250
GLEAVE, LARRY, N DARTFORD, SPOKANE WA	$	250
GOODMAN, DAN, N WILSON, MEAD WA	$	250
JANOCHA, DAVID, WEST ROAN COURT, LAKE PARK FL	$	250
KONZ, STEPHEN, HWY 21 S.O., REPUBLIC WA	$	250
LANCE, MONTE, N MALVERN, LIBERTY LAKE WA	$	250
LIVENGOOD, JOHN, W 4901 BRIDGES RD, DEER PARK WA	$	250
LUPPENS, CHRIS, N HUETTER RD., COEUR D"ALENE ID	$	250
MARTIN, NICHOLAS, N LINCOLN, SPOKANE WA	$	250
MORSE, DON, N. 154 RICHMOND LN., CHEWELAH WA	$	500
PALMER, AARON, N SARGENT RD, SPOKANE VALLEY WA	$	250
PICHETTE, THOMAS, E. 212 PRINCETON, SPOKANE WA	$	750
STANLEY, BRYAN, WALTHAN WAY, LAKE WORTH FL	$	250
YEAW, JAMES, W CLEVELAND, SPOKANE WA	$	300
Central Office		
BARTON, RANDY, FASOLA RD, SEQUIM WA	$	250
BERCOT, JASON, N CHARLOTTE AVE, BREMERTON WA	$	250
BLAKEY, KEITH, PO BOX, CLINTON WA	$	250
BURGESS, RICK, WASHINGTON, HOQUIAM WA	$	1,000
CABAIIERO JR, PEDRO, NE 148TH STREET, SHORELINE WA	$	500
CABLE, TONY, E RUNNION RD, SEQUIM WA	$	200
DEWITT, SEAN, A ST SE, AUBURN WA	$	300
GARNER, LUCAS, PLEASANT AVE, BREMERTON WA	$	250
HALME, DALE, PO BOX, BATTLEGROUND WA	$	300
MALONE, MARK, 54TH AVE NE, MARYSVILLE WA	$	250
SABINO, ALANDENNIS, NE 197TH CIRCLE, BRUSH PRAIRIE WA	$	1,000
STEPHENSON, DAVID, ST SW, PUYALLUP WA	$	200
WEBSTER, MICHAEL, 108TH ST CT E, BONNEY LAKE WA	$	250
WESTOVER LLL, RICHARD, PO BOX, WOODINVILLE WA	$	250

Violation – No Electrical Work Permit

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Region 1 – North Puget Sound

A A PLUMBING LLC, VISTARAMA AVE, EVERETT WA	$	250
A COMPLETE OFFICE INSTALLATION, SE 198TH ST., RENTON WA	$	250
A L C ELECTRIC, MUKILTEO SPEEDWAY, LYNNWOOD WA	$	1,000
AGERS, FLOYD, 67TH ST NE, MARYSVILLE WA	$	250
ALBERTO SERVICES, AUBURN WAY S, AUBURN WA	$	250
ALL WAYS AIR CONTROL INC, S CENTER T, TACOMA WA	$	250
ANDERSON, MICHAEL, PARK STREET, BELLINGHAM WA	$	250
ANDERSON, WILLIAM, 86TH PL NE, MARYSVILLE WA	$	250
ASAP HEATING, A/C & APPLIANCE LLC, NE 128TH STREET, KIRKLAND WA	$	125
AUTOMATED COMMUNICATIONS CORP, PACIFIC HIGHWAY E, FIFE WA	$	250
AUTOMATIC DOOR & GATE CO., SR 9 NE PMB, LAKE STEVENS WA	$	1,000
BARTLETT ELECTRIC INC., S SANDY HOOK DR., CLINTON WA	$	2,000
BOLD, JIM, 85TH AVE. SE, WOODINVILLE WA	$	250
BOSCH ELECTRIC, PO BOX, LAKE STEVENS WA	$	250
BRITE SOLUTIONS, PINEWOOD AVE, BELLINGHAM WA	$	250
BROADBAND UTILITY SPCLST INC, 107TH ST SE, SNOHOMISH WA	$	1,000
BURTT, ADAM, 229TH ST SW, EDMONDS WA	$	250
C R FLOORS NORTH INC, SMOKEY POINT BLVD, MARYSVILLE WA	$	750
CAMWEST DEVELOPMENT, 183RD ST SE, BOTHELL WA	$	250
CAPES, GREG, BEVERLY LANE, EVERETT WA	$	250
CARTER PLACE INVESTMENTS, 129TH AVE NE, KIRKLAND WA	$	1,500
CONSTRUCTION EQUIPMENT MAINT. INC., 157TH AVE SE, SNOHOMISH WA	$	250
CRAVEN, MARK, SHORT SCHOOL RD., SNOHOMISH WA	$	250
D A L CONSTRUCTION, 196TH PL NE, WOODINVILLE WA	$	250
D T S INC., 118TH AVE. SE, NEWCASTLE WA	$	250
D.R. SMITH CO. INC., HWY 99, EVERETT WA	$	250
DARITECH INC, BENSON RD., LYNDEN WA	$	1,000
DEFINITIVE ELECTRIC, 105TH AVE NE, KIRKLAND WA	$	250
DENNIS WEBB ELECTRIC INC., 220TH SW, BOTHELL WA	$	250
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	250
DREAMTECH, S 336TH ST., FEDERAL WAY WA	$	250
ELECTRO-SERVE LLC, SE 30TH ST, BELLEVUE WA	$	1,000
ELEMENT ELECTRIC INC., SE 38TH ST., BELLEVUE WA	$	250
EVERGREEN STATE SHEET METAL, PACIFIC AVE., EVERETT WA	$	1,000
EXTREME SECURITY, STATE ROUTE 92, LAKE STEVENS WA	$	2,000
FORMULA TIRE AND CAR CARE CENTER, STATE AVE, MARYSVILLE WA	$	250
G & S HEATING CO INC, E MAIN ST, MONROE WA	$	500
G B SYSTEMS INC, NE 175TH ST, KENMORE WA	$	250
GALLISON SYSTEMS LLC, PO BOX, MILL CREEK WA	$	250
GAYLORD INDUSTRIES INC., NACHES AVE. SW, RENTON WA	$	1,000
GREEN, ERIC, CASTLEROCK DR, BLAINE WA	$	250
GROFF'S ELECTRIC HEAT INC, S UNION AVE, TACOMA WA	$	2,000
HANSEN, MARK, PO BOX, EUGENE OR	$	250
HOME THEATRE SPECIALTIES, ASH WAY, LYNNWOOD WA	$	2,000
HY-TEC CUSTOM HYDRONICS, AURORA AVE N, SEATTLE WA	$	250
INTUITIVE INTEGRATION LLC, 196TH ST SW, LYNNWOOD WA	$	250
ISLAND SIGNS & DESIGNS, PELTER DR, POINT ROBERTS WA	$	250
JACKSON, RICHARD, PO BOX, EVERSON WA	$	250
JIRA, JEFF, 7TH AVE NE, TULALIP WA	$	250
JONES LIGHTING MAINTENANCE, INC., 90TH AVE. NE, KENMORE WA	$	750
JUNEVITCH CONSTRUCTION, SE 216TH ST, MAPLE VALLEY WA	$	250
KEITHLY ELECTRIC CO, SOUTH DIRECTOR, SEATTLE WA	$	1,000
KEVIN MILLER ELECTRIC, GOOD PIPER LANE, FREELAND WA	$	250
L & L ELECTRIC INC, CHENNAULT BEACH ROAD, MUKILTEO WA	$	1,000
LANE, STEVEN, FOSTER SLOUGH ROAD, SNOHOMISH WA	$	250
MARZOLF, MARK, 78TH ST. SE, SNOHOMISH WA	$	250
MATRIX ENERGY SERVICES, GOODWIN WAY NE, SEATTLE WA	$	250
MITCHELL CRANE AND EQUIPMENT CO., PO BOX, MEDFORD OR	$	250
NETWORK ELECTRIC, INC., PO BOX, BOTHELL WA	$	250

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ODECHUK, VIKTOR, PICNIC POINT RD, EDMONDS WA	$	250
P.O.P. ELECTRIC INC, PO BOX, BOTHELL WA	$	250
POENITSCH, DON, 84TH AVE. NE, EVERETT WA	$	250
PROGRESSIVE AIR SYSTEMS INC, INTERURBAN BLVD, SNOHOMISH WA	$	4,000
R & D ELECTRIC ENTERPRISES INC, 76TH AVE WEST, EDMONDS WA	$	50
R & I ELECTRICAL CONTRACTORS, INC, 89TH AVE NW, STANWOOD WA	$	1,000
ROBKO CONSTRUCTION, BARING WAY, EVERETT WA	$	250
SAN JUAN DIGITAL SECURITY INC., PO BOX, FERNDALE WA	$	250
SENNER ELECTRIC COMPANY LLC, WAGNER RD., MONROE WA	$	250
SHORELINE ELECTRIC INC., 89TH PL W, EDMONDS WA	$	1,000
SHORELINE SIGN & AWNING, AURORA AVE N, SEATTLE WA	$	250
SIGNATURE ELECTRIC, BONAPARTE LN, OAK HARBOR WA	$	250
SPECIALTY PUMP & WELL INC, 152ND ST SE, SNOHOMISH WA	$	250
SPRINGER, TODD, 84TH ST NE, LAKE STEVENS WA	$	250
STAYBRIGHT ELECTRIC, CALLE HERMOSA, CAPISTRANO BEACH CA	$	375
SUNDANCE ENERGY SREVICES INC, PO BOX, BOTHELL WA	$	250
SUSHCH, VICTOR, OREGON TRAIL, MAPLE FALLS WA	$	250
THOMAS, CRAIG, MARINE DR., BELLINGHAM WA	$	250
THOMAS, DONALD, 108TH ST SE, EVERETT WA	$	250
TOTAL ENERGY MANAGEMENT INC, BUTLER LOOP ROAD, RICHLAND WA	$	1,000
ULTRA ELECTRIC LLC, SMOKEY POINT BLVD, ARLINGTON WA	$	250
WHITFORD, DAVE, RICCI ROAD, MONROE WA	$	250
Region 2 – King County		
D & K ELECTRIC INC, PO BOX, LYNWOOD WA	$	250
DESIGN ELECTRIC, MANANA RD, DALLAS TX	$	2,000
DREAMTECH, S 336TH ST, FEDERAL WAY WA	$	250
EATON ELECTRICAL SERVICES & SYSTEMS, S.E 30TH STREET, BELLEVUE WA	$	250
EMERALD AIRE INC, D ST NW, AUBURN WA	$	250
GREG'S ELECTRICAL SERVICES INC, SE 46TH WAY, ISSAQUAH WA	$	1,000
HERITAGE ENTERPRISES INC, PACIFIC AVE, TACOMA WA	$	1,000
INVESTCO FINANCIAL CORP., PUYALLUP ST., SUMNER WA	$	250
M Z CONSTRUCTION LLC, KIRKWOOD PL N SUITE, SEATTLE WA	$	250
MANCHIK, OLEG, HIGHLAND DR. SE, AUBURN WA	$	1,000
MASTERBUILT ESTATE HOMES INC, 212TH AVE SE, MAPLE VALLEY WA	$	250
NOUCH, CHANTHA, MILITARY ROAD SOUTH, SEATTLE WA	$	250
PAK-RITE EQUIPMENT LLC, RIVERVIEW ST, EAGLE ID	$	250
POWER VAC ENTERPRISES, PO BOX, TACOMA WA	$	250
RICHARDS, DOUGLAS, 61ST AVE NE, KENMORE WA	$	250
SECURITY ONE INC, 104TH ST. CT S, LAKEWOOD WA	$	250
SIEMANS BLDG TECHNOLOGIES INC., SE 51ST ST., ISSAQUAH WA	$	1,000
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
AA SIDE X SIDE, SW 372ND ST., FEDERAL WAY WA	$	250
BEST BUY, RIDGETOP BLVD N W, SILVERDALE WA	$	250
BRENNAN HEATING, 152ND AVE. E., REDMOND WA	$	1,000
DELTA WYE ELECTRICAL CONTRS, PO BOX, BONNEY LAKE WA	$	250
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	750
GROFF'S ELECTRIC HEAT INC., S. UNION AVE., TACOMA WA	$	1,000
HARRINGTON ELECTRIC INC, 46TH AVE E, SPANAWAY WA	$	250
INVESTCO FINANCIAL CORP, PUYALLUP ST., SUMNER WA	$	2,500
KEN BOBKO ELECTRIC CO. INC., PO BOX, TACOMA WA	$	250
LENT MECHANICAL LLC, STATE HIGHWAY 3 SW, PORT ORCHARD WA	$	250
MCINNIS, ERIKA, 16TH AVE CT S, ROY WA	$	250
PHIMCHINDA, SOMSAK, 186TH AVE. E, BONNEY LAKE WA	$	250
PLATINUM ELECTRICAL SERVICES, PO BOX, WAUNA WA	$	250
PLUMB SIGNS INC, S. 28TH ST., TACOMA WA	$	1,000
POWER DESIGNS INC., 66TH AVE CT E, GRAHAM WA	$	2,000
RTC CONSTRUCTION, WOODHILL DR NW, GIG HARBOR WA	$	250
STAYBRIGHT ELECTRIC, CALLE HERMOSA, CAPISTRANO BEACH CA	$	125
Region 4 – Southwest Washington		
A+ ELECTRICAL SERVICES, PACIFIC AVE, OLYMPIA WA	$	4,000

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ALLIED ELECTRIC SERVICE INC, PO BOX, LACEY WA	$	250
AMTECH LIGHTING SERVICES, EAST ORANGEWOOD AVE, ANAHEIM CA	$	1,000
ANDERSON GROUP INTERNATIONAL, TYINN #24, EUGENE OR	$	250
B C M CONSTRUCTION, NE PERRAULT DR, VANCOUVER WA	$	250
BETHESDA SLOVIC CHURCH, RUBEN LN, SANDY OR	$	250
CHRISTOPHER, ROBERT, CAMBRIDGE LANE, OLYMPIA WA	$	75
COLEMAN, BRUCE, N. E. 12TH AVE, VANCOUVER WA	$	250
D & M ELECTRIC, S. 3RD, KELSO WA	$	250
D B CONSTRUCTION, OCTOPUS AVE, OCEAN SHORES WA	$	250
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	250
DUNRITE MECHANICAL LLC, NW 25TH PLACE, BATTLE GROUND WA	$	2,250
FLOWERS, JERI, NW 10TH AVE, VANCOUVER WA	$	250
FRITZ MECHANICAL, N.E. 237TH AVE, BATTLEGROUND WA	$	250
HARTFORD, DUANE, PO BOX, SATSOP WA	$	250
HAUSSERMAN, DENNIS, , KALAMA WA	$	250
HOME ALLY LLC, SE 131ST AVE, VANCOUVER WA	$	250
KING ENTERPRISES, 164TH STREET SE, SNOHOMISH WA	$	250
M H C HEATING & COOLING, PO BOX, PORTLAND OR	$	250
MANZURA ELECTRIC, NE 61ST PL, VANCOUVER WA	$	250
NAYDEN LLC, PO BOX, VANCOUVER WA	$	1,000
NORTHWEST REFRIGERATION, CAPITOL BLVD, OLYMPIA WA	$	250
O'MALLEY, KAREN, PO BOX, VANCOUVER WA	$	250
PRIETO, JOHN, OLD PACIFIC HWY S.E., OLYMPIA WA	$	500
R J ASHTON ELECTRIC LLC, PO BOX, VANCOUVER WA	$	2,000
ROGER'S HANDYMAN SERVICE, NE 121 AVE, VANCOUVER WA	$	250
SEAGULL CONSTRUCTION INC, PROVISIONER LANE, OREGON CITY OR	$	250
SPOKANE SECURITY SYSTEMS, N. PINES RD, SPOKANE WA	$	1,000
STANLEY SECURITY SOLUTIONS INC, E 75TH ST, INDIANAPOLIS ID	$	250
STAYBRIGHT ELECTRIC, CALLE HERMOSA, CAPISTRANO BEACH CA	$	250
STRADER, GENE T. SR., PO BOX, KELSO WA	$	250
VIKING HEATING INC, PO BOX, GRESHAM OR	$	250
WALLACE ROCK PRODUCTS, MANDY RD, TOLEDO WA	$	250

Region 5 – Central Washington

ABSOLUTE COMFORT LLC, MOUNTAINVIEW AVE., YAKIMA WA	$	250
ACE ELECTRIC, COLUMBIA PARK TRAIL, RICHLAND WA	$	250
ADVANCED MECHANICAL/ELECT INC, MAPLEWAY RD, YAKIMA WA	$	250
AHTANUM ELECTRIC INC, SISOTOW BELLE LN, YAKIMA WA	$	250
ALLAN ELECTRIC INC., A WEST CANAL DR., KENNEWICK WA	$	250
AMERCO REAL ESTATE DIV., PO BOX, PHOENIX AR	$	250
ATHA, DANIEL, ALLEN RD., SUNNYSIDE WA	$	250
BECKSTEAD ELECTRIC INC, 9TH ST C, WENATCHEE WA	$	1,000
CHIM CHIMNEY FIREPLACE & SPA, N WENATCHEE AVE, WENATCHEE WA	$	750
CHINI, JOE, WEST 10TH, ELLENSBURG WA	$	250
CUSTOM WORKS, HAWORTH RD., PASCO WA	$	250
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	750
DIAMOND CONSTRUCTION, N 8TH ST, YAKIMA WA	$	250
DOYLE ELECTRIC INC, DELL AVE, WALLA WALLA WA	$	2,000
GARCIA, ADALBERTO, S 41ST ST, YAKIMA WA	$	250
K N S ALARM SERVIES, E. GRACE AVE., SPOKANE WA	$	250
LESCO ELECTRICAL, 9TH ST, PROSSER WA	$	500
MATTHEWS ELECTRIC LLC, PO BOX, PASCO WA	$	250
MID VALLEY ELECTRIC, ,	$	250
NOR'WEST ELECTRIC, PO BOX, PROSSER WA	$	250
PHASE 2 ELECTRIC, PO BOX, PASCO WA	$	250
PLATINUM ELECTRIC SERVICES, PO BOX, WAUNA WA	$	250
PRESTON, BRENT, E VINYARD DRIVE, PASCO WA	$	250
RISE, JEFFREY, N 17TH AVE, PASCO WA	$	250
RUSSILLIO'S LLC, E. YAKIMA AVE, YAKIMA WA	$	250
STEGEMAN ELECTRIC, PO BOX, GRANDVIEW WA	$	250
VACUUM SOURCE LLC, VALLEY MALL PARKWAY, EAST WENATCHEE WA	$	250
VALMONT NORTHWEST INC, E. HILLSBORO ROAD, PASCO WA	$	250

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Region 6 – Eastern Washington

AAPEX CONSTRUCTION INC., N GOVERNMENT WAY, COEURD'ALENE ID	$	250
BAKER, SANDON, E SHARPSBURG AVE, SPOKANE WA	$	250
BANUELOS, LARRY, N SUMMIT BLVD, SPOKANE WA	$	250
BASILE, MARK, 11 E RIVERSIDE AVE, SPOKANE WA	$	250
CHINN, JOSEPH, PO BOX, CASTRO VALLEY CA	$	250
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	750
GARY'S SIGN SERVICE, E SUNVIEW CIR., SPOKANE WA	$	250
GOODMAN, DAN, N WILSON, MEAD WA	$	250
INTERMOUNTAIN ELECTRIC INC, PO BOX, SPOKANE WA	$	250
K DIAMOND K DUDE RANCH, HWY 21 S.O., REPUPLIC WA	$	250
LELAND, DAVE, E MONTGOMERY, CITY OF SPOKANE VALLEY WA	$	250
NETVERSANT WASHINGTON, 1ST AVE S, SEATTLE WA	$	250
NORCO HEATING & AIR COND INC, TRENT E., SPOKANE WA	$	1,000
PRIORITY NETWORKING, PO BOX, SPOKANE VALLEY WA	$	250
PRO HEATING @ A/C INC., PO BOX, SPOKANE WA	$	250
QUALITY ELECTRIC, PO BOX, NEWPORT WA	$	250
RAINBOW ELECTRIC INC., N NAPA, SPOKANE WA	$	2,000
ROSS, RICHARD, S SPRUCE, SPOKANE WA	$	250
WOMBLE, RYAN, S COWLEY, SPOKANE WA	$	250

Central Office

AFFORDABLE ELECTRIC SERVICE, WILLIAMS AVE, MOSES LAKE WA	$	250
BLAKEY, KEITH, PO BOX, CLINTON WA	$	250

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 4** **April 2007**

Change Of Inspection Jurisdiction For Tukwila

L&I was informed in mid March that the City of Tukwila was taking responsibility for all electrical inspections effective April 2, 2007. Permits and inspections for electrical installations done within the city limits of Tukwila must be obtained directly from the city of Tukwila. Please contact the city for permit requirements and information. The City of Tukwila's web site address is:

http://www.ci.tukwila.wa.us/

Do not buy your City of Tukwila electrical permits from an L&I counter or from our online permitting system. Labor and Industries will continue to perform inspections on electrical permits purchased prior to April 2nd. Refunds are not allowed on any permit that has had an inspection.

Outdoor Feeders – more than one building or structure

Outdoor feeders have very different requirements than services. NEC 225.30 has specific restrictions for the number of outdoor feeder supplies to a building or structure. Except as allowed in NEC 225.30 (A) – special conditions, (B) – special occupancies, (C) – capacity requirements, (D) – different characteristics, and (E) – documented switching procedures, only **one feeder supply** is allowed to a building or structure.

Disconnecting means must be installed for all ungrounded conductors that supply or pass through a building (NEC 225.31). The building or structure disconnecting means must be installed either inside or outside, within 15' of the footprint of the building or structure (WAC 296-46B-225). The disconnecting means must consist of no more than six switches or circuit breakers mounted in a single enclosure, in a group of enclosures, or in or on a switchboard. The allowed disconnects must be grouped and marked to indicate the load served (NEC 225.34). You should refer to NEC 225 II Section II, *"More Than One Building or Other Structure,"* for other outdoor feeder requirements.

Telecommunication (09) Contractor Scope of Work

Recently, the department has written citations to telecommunication (09) contractors for working outside the scope of their license (i.e. installing cable tray classified for use as an equipment grounding conductor). The (09) contractor's scope of work is limited to the installation, maintenance, and testing of telecommunications systems, equipment, and associated hardware, pathway systems, and cable management systems. Telecommunication technician certification is not required; but the technician must be employed by a licensed (09) contractor while performing telecommunications work.

Until recently, unclassified cable tray systems were available for use by the telecommunications industry. Because unclassified tray is not approved for use as an electrical wiring method (e.g. grounding conductor), the installation of the unclassified tray was allowed to be done by telecommunications contractors as a "cable management system." The most common brand-name tray product that was typically used by the telecommunications industry recently received a "classified for equipment grounding" approval for their product. When the tray system is suitable for use as an electrical wiring method, its installation cannot be done by a telecommunications contractor.

Cable support and raceway methods allowed to be installed by a telecommunication (09) contractor are limited to:

- Cable management systems
- Surface nonmetallic raceways designed and used exclusively for telecommunications;
- Optical fiber innerduct raceway; and
- incidental short sections of metal raceway, not to exceed 10'.

See WAC 296-46B-920 for more details on the scopes of work for all specialties.

http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/LawsRules

Correction Reduction Initiative

The selected contractors in the correction reduction initiative continue to do a great job in further reducing their corrections. The selected contractors have reduced their corrections from a prorated average of 40,386 corrections to 29,965 per year. This is an overall decrease of 26%. This is a tremendous improvement over their July-August 2006, numbers. The improvement in the quality of work has saved them and the department considerable resources. A new group of contractors will be selected in July based on the number of corrections issued from July 2006 through June 2007.

Remember, every correction you receive costs you and the Electrical Program time and money. Please continue to work with your electricians to help them improve their installations.

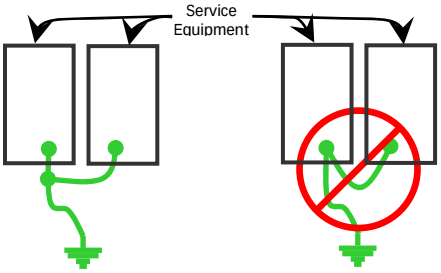
Grounding Electrode Conductor Attachment For Multiple Service Enclosures

When a service consists of more than a single enclosure, the grounding electrode conductor must be:

- Taken separately to each enclosure; or
- Tapped and a separate tap taken directly to the inside of each enclosure.

Installers are not allowed to run a grounding electrode conductor from the electrode through one enclosure to another. When a grounding electrode conductor is installed in such a manner, it is not a permanent and effective grounding path as required in NEC 250.68.

NEC 250.64(D) allows the grounding electrode conductor to be tapped and a separate tap taken directly to the inside of each enclosure. Tap installation requirements can be found in NEC 250.64(D).



Generator Permit Fees

The fees for permanently installed generator systems are based on the fees charged for feeders. A generator system includes all installed equipment from the source of power to the supplied disconnect and overcurrent device (typically a panelboard).

In a new single or two-family dwelling, the entire generator system permit fee is included in the square footage fee for the dwelling unit(s). No additional fees are required.

In a new multi-family dwelling, the generator system fee must be calculated using the feeder fees listed In WAC 296-46B-905(1)(b).

In an existing single, two-family building, or when modifying an existing generator system in a multi-family dwelling, the generator system fee must be calculated using the feeder fees listed in WAC 296-46B-905(1)(c).

In a new commercial facility, the generator system fee must be calculated using the feeder fees listed In WAC 296-46B-905(2)(a).

When modifying an existing generator system in an existing commercial/industrial facility, the generator system fee must be calculated using the feeder fees listed In WAC 296-46B-905(2)(b).

Depending on the system design, there may be one or more feeders involved in the generator system.

Electrical Question of the Month

This Month's Question: The rating of the required disconnecting means for each ungrounded conductor of a capacitor bank shall not be less than ____% of the rated current of the capacitor.

A) 100%, **B)** 115%, **C)** 125%, **D)** 135%.

Last Month's Question: Ground-fault circuit-interrupter protection for personnel shall be provided for outlets that supply _____ installed in dwelling unit locations and supplied by 125-volt, 15- and 20-ampere branch circuits.

A) attics, B) **boat hoists**, **C)** unfinished basement bedrooms, **D)** none of the answers are correct

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 3** **March 2007**

Trainee Basic Electrical Classroom Education Information

A new education requirement affecting electrical trainees becomes effective July 1, 2007. A change in the electrical law requires trainees to receive eight hours of basic electrical classroom education per year before renewing their training certificate. Trainees renewing their training certificate, after December 31, 2007, must have completed a total of sixteen hours of basic electrical classroom education during the previous two years. Trainees who attempt to renew without the required training will be placed into inactive status and cannot work until the training is completed and the training certificate is reactivated.

Between July 1, 2007 and December 31, 2007 will need to have only eight hours of required basic electrical classroom education.

The industry has a need for providers of electrical training classes. Education providers should review WAC 296-46B-970 before submitting a "Classroom Education Electrical Training" course to the department for approval. Classroom education classes must cover the RCW 19.28, WAC 296-46B, the currently adopted National Electrical Code, or electrical theory. Electrical theory must be based on currently published materials that are readily available through retail purchase. All classes are required to be at least eight hours in length. Classes may be divided into intervals of not less than two hours each, so long as the class is completed within a one month period. Based on input from the Electrical Board, the required exam must have at least 5 questions for each two hours of credit.

All approved classes in this new category are posted on the Electrical Program website. The list will be updated regularly as more classes and providers are approved. Visit the link for more information:

http://www.lni.wa.gov/TradesLicensing/Electrical/LicenseExamEd/Education/TraineeClasses

Engineering Evaluations

The department is pleased to announce the approval of two engineers to perform engineering evaluations of industrial utilization equipment and industrial control panels, as defined in WAC 296-46B-901. The evaluation is used to determine that equipment conforms to applicable electrical standards.

Engineering evaluations were created to allow customers an alternative method to get their industrial equipment approved for use. After July 1st, 2007, the Electrical Program will no longer evaluate industrial equipment. For industrial equipment to be approved under an Engineering Evaluation, the equipment must meet the same electrical safety standards as in a department review. As with a department evaluation, an engineering evaluation will only approve or disapprove the equipment as it was manufactured.

If the equipment is determined to not meet the minimum safety standard, the equipment must have a field evaluation performed. Engineers will not issue correction notices to meet the standard.

If the evaluating engineer determines that the equipment meets the applicable standard(s), the engineer will place an approval label on the equipment. The electrical inspector will accept the approving engineer's label as verification that the equipment is appropriate for use.

The contact information for all approved engineers is located on the electrical program website and updated regularly as individuals are approved. **The department will refer all requests for Department Evaluations to approved engineers.** Below is the contact information for the two approved engineers.

- **Parker Messana & Associates, Inc (253) 926-0884 www.pma-engr.com/**
- **Power Science Engineering (206) 306-6745 www.power-sci.com/**

● AFCI Are required For Fire Station Sleeping Quarters NEC 210.12(B)

As stated in the National Electric Code: *"All 120-volt, single phase, 15-and 20-ampere branch circuits supplying outlets installed in dwelling unit bedrooms shall be protected by a listed arc-fault circuit interrupter, combination type installed to provide protection of the branch circuit."*

Webster's Dictionary defines "bedroom" as *"a room intended for sleeping".* In a fire station, the sleeping area and living area are similar to those found in a dwelling (i.e. it has space intended for living and sleeping, and permanent provisions for cooking and sanitation). NEC 210.12(B) must be followed in these types of occupancies. This requirement does not extend to rooms such as living rooms, food preparation rooms, or recreation rooms that are not primarily designed for use as a sleeping room.

● Camera Installation Questions: Limited Energy (06) or Telecommunications (09)?

We have been asked to clarify which specialties are allowed to do work associated with various technologies used in the installation of surveillance cameras. Some acronyms commonly used in this industry are: Internet Protocol (**IP**) camera, Power over Ethernet (**POE**), Pan, Tilt, and Zoom (**PTZ**), Category 5e Unsheilded Twisted Pair data cable (**Cat 5e UTP**) and type RG6 coaxial cable (**RG6 co-ax**).

Which of the following can be installed by a (09) telecom contractor/uncertified worker and which must be installed by a (06) limited energy contractor/electrician (or higher)?

1.	POE, IP camera both fixed and PTZ over which the power for the camera and the PTZ is superimposed over the video data transmission pairs (Cat 5e UTP) feeding the camera.	**06**
2.	POE, IP camera with PTZ powered by a separate 2 conductor low voltage cable and video data run over the Cat 5e UTP cable.	**06**
3.	POE, IP camera with PTZ with local power outlet installed by an electrician at the camera location and powered from this outlet using a plug in transformer. Video data run over Cat 5e UTP.	**06**
4.	Analog camera fixed using RG6 co-ax and powered using a transformer plugged into a local electrical outlet installed by an electrician.	**09**
5.	Analog camera (fixed or PTZ) using RG6 co-ax and powered by separate 2 conductor low voltage cables.	**06**

During the development of the telecommunications bill in the 2000 legislative session, telecom industry representatives agreed that telecom workers would only install voice, data, video, and limited audio cables at signal levels well below the level of limited energy (typically Class 2) power conductors. For this concession, telecommunications workers were not required to have individual certification. Installation of limited energy power conductors remained exclusive to the (06) limited energy specialty scope requiring 06 contractor licensing and 06 electrician certification.

The telecom bill, RCW 129.28.400(13) (b), allowed "*other limited-energy interconnections associated with telecommunications systems or appliances*". This allows the:

- Installation of local plug-in power for fixed video monitoring, plug-in power supply to a phone answering machine or wireless alarm panel;

Local Class 2 power supply connection to a radio frequency (RF) product identification system transmitter (at a store exit door) could be completed by a telecom worker.

● Electrical Question of the Month

This Month's Question: Ground-fault circuit-interrupter protection for personnel shall be provided for outlets that supply _____ installed in dwelling unit locations and supplied by 125-volt, 15- and 20-ampere branch circuits.

A) attics, **B)** boat hoists, **C)** unfinished basement bedrooms, **D)** none of the answers are correct

Last Month's Question: The replacement of a like-in-kind 120V lighting control panel containing relays, contactors, snap switches, timers, and inter-connected wiring only, requires a general permit?

A) Yes, **B)** No; Class B label required, **C)** Either A or B, **D)** None; it's like-in-kind Class A work
The answer is: A) (It is an assembly of exempted components, not a single component) [WAC 296-46B-900(8)(b)].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

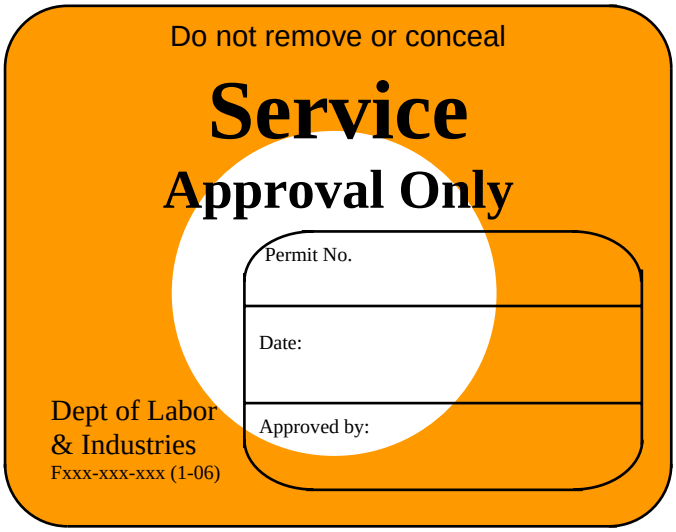
Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 2SE** **February 2007**

SPECIAL EDITION

Service Approval Only Labels

Effective May 1, 2007, you will see a significant change in the approval sticker that will be left on the jobsite for **service approval**. The change is being made to eliminate any confusion as to when the service has been approved for connection by the electrical utility. The new sticker is **Orange** in color and is labeled **Service Approval Only**. This label will be posted on the exterior of the meter base so it is easily visible to the electrical utility.



The current **green approval sticker will continue to be used only for non-service item approvals** such as wall cover, ditch cover, and final approvals. The green approval stickers will not be posted on the outside of any meter enclosure after May 1st.

Several Electrical Board Position Terms Are Expiring

RCW 19.28.311 Composition and responsibilities of the electrical board:

The Governor appoints the fifteen Electrical Board members. Board members are appointed for four years. The board advises the director on all matters pertaining to the enforcement of the electrical and telecommunications RCW. The board normally meets once each quarter (i.e. the last Thursday in January, April, July, and October). On rare occasions, the board may have a special meeting. Board members are reimbursed for travel expenses.

The four board positions up for re-appointment in July 2007:

- **Electrical Contractor**
- **Electrical Contractor**
- **Electrician**
- **Manufacturer/Distributor**

If you are interested in being appointed to one of these positions, you can find the application and instructions for applying on the Governor's website at:

http://www.governor.wa.gov/boards/application.doc

You should mail your application package to the Governor's office. Applications may also be sent electronically to the Governor at:

http://www.governor.wa.gov/contact/default.asp

Applications should be received by the Governor by March 30, 2007

● Renewal Forms Are Changing

We are changing the way we notify electrical contractors, administrators, master electricians, and electricians of their need to renew. The old renewal letters are being replaced with a postcard type notice. We are making this change to reduce the mailing costs, provide better information to the customer, and encourage the use of our online renewal system.

Electrical/ Telecommunications Contractor Renewal postcards will provide the following information to be reviewed for accuracy:

- Bond Carrier Information
- Insurance Carrier Information (if applicable)
- Insurance Expiration Date (if applicable)
- Currently Assigned Administrator
- Phone, UBI, and License Numbers
- Expiration Date and Renewal Fee
- Detailed Renewal Options

Electrical Certification Renewal postcards will provide the following information:

- Certificate Number and Type
- CEU Information for Current Renewal Cycle
- Expiration Date and Renewal Fee
- Electrical Contractor Assignment (if applicable)
- Detailed Renewal Options

Renewals may be processed and paid for online using our quickcards licensing system. Your credit card transaction is secure. The web link for renewing your license or certificate is

http://www.lni.wa.gov/TradesLicensing/Electrical/LicenseExamEd/LicenseCert/default.asp

Trainee renewals will not be affected by this change.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 2** **February 2007**

Legislative Update, Proposed Law Changes That May Effect Our Industry

The 2007 legislative session began January 3, 2007. Every year thousands of bills are presented to the legislature with high hopes from the authors that they become law. Only a small portion of these bills are successful. The L&I Electrical Program tracks all the proposed bills that may have an impact on our stakeholders and/or the Electrical Program. Bills can be introduced as late as the last day of session, April 22, 2007. Legislation that may affect the electrical construction industry this year includes:

HB 1013	Photo ID to be worn by electricians	HB 1587	Photo ID for electricians
HB 1876	HVAC/R legislation	HB 1917	HVAC/R legislation
SB 5831	HVAC/R legislation	SB 5875	HVAC/R legislation

Whether you support or oppose any legislation, it is important to be aware and involved with the legislative process. New laws can directly affect the way you do business. You may research the status of these or other legislation at:

http://www1.leg.wa.gov/legislature

Factory Assembled Structures Electrical Permits Can Now Be Purchased Online

The ability to purchase Manufactured Housing Alteration permits online and request inspections online has finally arrived for contractors and homeowners. Some services will not be offered online such as structural permits, variances and fire safety inspections.

Similar to purchasing electrical permits online, you can sign up for Secure Access Washington and use a contractor deposit account, or you may purchase a Manufactured Housing Alteration permit with a credit card. To request an inspection you will use the code that is printed on the 2nd page of the permit. When requesting an inspection online you will be asked to give your daytime phone number so the inspector can call you and set up an actual date and time for inspection.

To purchase an alteration permit or request an inspection, please go to the following link and click on the permit or inspection tab: **http://www.lni.wa.gov/TradesLicensing/FAS/Types/Mobile/default.asp**

Correction Reduction Initiative Participants Are Showing Improvement

- In June of 2006 a special project, "The Correction Reduction Initiative" was begun by the Electrical Program. Our goal is for the selected electrical contractors to reduce their corrections by 15% by July 1, 2007. Since we began the initiative, the result for these selected contractors is very promising. Their corrections have been reduced by 35% (i.e. 1,207 corrections) since September.

This month, the "number one" correction written for electrical contractors continues to be: "Request for inspection when the work is not ready for inspection, no access or cannot find the inspection, or the work is concealed/covered". This easily avoidable correction is very expensive and counterproductive for both contractors and L&I inspectors. This issue cost electrical contractors over $46,000 in extra trip fees in January alone and over 1,200 extra inspection trips. For each inspector, that was one wasted day's worth of inspection time in January.

When Is A Building Weatherproof Enough To Install Dry Location Wiring?

Our contractors have made us aware that inspection offices around the state have been requiring different levels of building closure before wiring can be installed using dry location wiring methods. The NEC or electrical rules (WAC) do not require a specific level of construction completion before wiring may begin. The Code does recognize that a normally dry location may be subject to dampness or wetness while a building is under construction. However, this does not allow NM cables to get wet during the construction process.

The minimum requirements for a building to be considered dry are when the wall and roof sheathing are installed and the roof is completely covered by a waterproof membrane such as roofing felt. If wind-driven rain is likely, contractors would be wise to cover the rough openings or have windows in place before wiring. If dry location wiring gets wet by any method, the inspector may require wiring that has been wet to be replaced prior to approval.

National Electrical Manufacturer's Association (NEMA) guidelines state, "*Any wire or cable that is listed for dry locations only, such as type NM-B cable, should be replaced if it has been exposed to water*." These guidelines must be treated as manufacturer's installation instructions. (See the August 2005 edition of this newsletter for details.)

● Opportunities For Military And Shipyard Experience WAC 296-46B-940(20)

In an effort to help our military veterans return to civilian employment and alleviate the shortage of experienced electrical workers, the electrical rules have been revised to clarify opportunities to obtain military and/or shipyard experience credit towards qualification for electrician exams. The rules recognize that electrical maintenance and repair work performed in the military or in shipyard construction, while not identical to civilian electrical systems, is similar enough to be considered for on-the-job training experience.

While experience has always been allowed for military building electrical construction, the rules now include nuclear, marine, shipyard, shipboard, radar, weapons, aeronautical or similar experience. Qualifying experience will have to be claimed for a specific specialty and supported though verifiable documents acceptable to the department. For veterans these documents include, but are not limited to: military DD-214 (or similar) discharge documents, training records, and official correspondence from commanding officers. Shipyard electricians need to submit the department's notarized affidavit of experience from their employer. L&I will evaluate all submitted documents and determine if the requested hours are appropriate towards qualifying for an electrician examination.

Regardless of how much actual electrical training or experience has been claimed, not more than 50% of the minimum work experience required to qualify for specialty electrician certification will be allowed. The other 50% must be obtained working under the proper supervision of a certified electrician while the individual has a valid training certificate.

● Attention Continuing Education Providers

Continuing Education class roster reporting has changed. Continuing education and basic classroom education completion rosters will only be accepted when submitted electronically through the new Trades Education Roster Recording System (TERRS).

When the course provider enters the roster information, the individual's certificate record is updated immediately. It is the responsibility of the provider to ensure timely and accurate data entry. About 50% of course providers have registered with the new TERRS system. If you have not registered and need help, send an email to **electricalprogram@lni.wa.gov** requesting assistance and we will contact you. If course providers fail to properly submit rosters using the new on-line system, electricians, trainees, and administrators will not be able to renew their certificates. This is a violation of the rules.

● Electrical Question of the Month

This Month's Question: The replacement of a like-in-kind 120V lighting control panel containing relays, contactors, snap switches, timers, and inter-connected wiring only, requires a general permit?

A) Yes, **B)** No; Class B label required, **C)** Either A or B, **D)** None; it's like-in-kind Class A work.

Last Month's Question: Temporary electrical power and lighting installations shall be permitted for a period not to exceed __ days for holiday decorative lighting and similar purposes? **A)** 30, **B)** 60, **C)** 90, **D)** until it's no longer needed. **The answer is: C) [NEC 590.3 (B)]**

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Final Judgments of Electrical Laws
For the 4th Quarter of 2006

Violator		Penalty
Violation – No Electrical Contractor's License		
Region 1 – North Puget Sound		
ALBERTO SERVICES, AUBURN WAY S #42, AUBURN WA	$	500
ARTISAN'S DESIGN & DEVELOPMENT, SR 527 SUITE #161, BOTHELL WA	$	1000
BAKER, NILES, HAM RD., FERNDALE WA	$	500
BUFFALO'S INC., DBA LACASSE CONSTRUCTION, GRAND AVE, EVERETT WA	$	500
CAJUN EXCAVATING INC, PMB 6141, MILL CREEK WA	$	500
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	500
ENTERPRISE INFORMATION SOLUTIONS INC., INDUSTRY DR, TUKWILA WA	$	500
HABITAT FOR HUMANITY OF SNOHOMISH COUNTY, 3201 BROADWAY, SUITE D, EVERETT WA	$	500
ISLAND SERVICE CO., PO BOX, FREELAND WA	$	500
KAUFMAN ENGINEERED SYSTEMS INC., WTRVILLE MONCLOVA RD., WATERVILLE OH	$	500
KENDALL, DANE, 56TH AVE. W., EDMONDS WA	$	500
MATSOLA, FEDOR, 19TH LN S #4, FEDERAL WAY WA	$	500
PEREZ, CALLENTINO, WOODRIDGE AVE., MOUNT VERNON WA	$	500
R & G CONSTRUCTION SERVICES INC, CALHOUN RD, MONROE WA	$	500
RIGGS, STEPHEN, BAYHILL DR., BURLINGTON WA	$	500
SHANON HEIGHTS HEATING, 68TH AVE NW, STANWOOD WA	$	500
SOLER, JOE, HICKOX ROAD, MOUNT VERNON WA	$	500
Region 2 – King County		
BEIMDIEK, ROBERT, 215TH ST SW #3, SNOHOMISH WA	$	500
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	4000
HACT CONSTRUCTION CORP, 188TH ST SW, LYNNWOOD WA	$	500
HEISKANEN, REINO, 9TH AV W, SEATTLE WA	$	500
MARCHENKO, ALEX, S 301ST DR, AUBURN WA	$	500
MARCHENKO, SERGEY, S 301ST DR, AUBURN WA	$	500
PETROVICH, MATTHEW, E AGATE BEACH DRIVE, SHELTON WA	$	1500
ROBINSON, MICHAEL, 120TH AVE. N. E. #2, BELLEVUE WA	$	500
SHEMEREKO, VASILIY, 6TH PL SW, FEDERAL WAY WA	$	500
TRAN, CUONG, S 309TH CT, FEDERAL WAY WA	$	500
WRIGHT GROUP EVENT SERVICES, EAST 48TH AVE., DENVER CO	$	500
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
AA SIDE X SIDE, SW 372ND ST., FEDERAL WAY WA	$	500
ADVERTISING SALES & MORE, COSMOS LANE, PORT ANGELES WA	$	500
BEST BUY, RIDGETOP BLVD N W, SILVERDALE WA	$	500
COMFORT MECHANICAL INC, S 220TH ST, KENT WA	$	500
DAY & NIGHT HEATING & COOLING, 112TH ST. S., LAKEWOOD, WA	$	500
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	1500
E - Z ELECTRIC INC. OF OREGON, PO BOX, MEDFORD WA	$	12500
FROLOV, VICTOR, PACIFIC AVE # 16, TACOMA WA	$	500
GLOVER, DAVID, 7TH ST SW APT. 201, PUYALLUP WA	$	500
KEYLON, CLYDE, 337TH ST. S., ROY WA	$	375
KREBS, CLINT, 8TH AVE S, ROY WA	$	500
MGOMEZ, ITZJAK, PO BOX, SEATTLE WA	$	500
MOBLEY, TROY, 109TH AVE. CT.E., PUYALLUP WA	$	4500
OLSON, JACK, 42ND AVE. CT. NW, GIG HARBOR WA	$	500
PHAM, KENNETH, PO BOX, TACOMA WA	$	500
PUGET SOUND AUGER SERVICE, 207TH AVE E, SUMNER WA	$	500
Region 4 – Southwest Washington		
CAPITAL CONTRACTING INC, JOPPA STREET, OLYMPIA WA	$	500
COMFORT SOLUTIONS HTG/CLNG INC, PO BOX, CLACKAMAS OR	$	500
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	500
DOUBLE R PRODUCTS, NW E STREET, GRANTS PASS OR	$	500
GLASPIE, TOM, 2ND AVE, TUMWATER WA	$	500
HANDYMAN CREW LLC, NE 134 AVE, VANCOUVER WA	$	500
L C M CONTRACTING INC, RUBEN LN BOX 13, SANDY OR	$	500
LOVELAND CONSTRUCTION LLC, SCHAFFRAN RD., CASTLE ROCK WA	$	500
LOVELL, DELBERT, VAIL LOOP & RUNYAN ROAD, RAINIER WA	$	500
M H C HEATING & COOLING, PO BOX, PORTLAND OR	$	500
MILLER, GRETCHEN, S 176TH ST , SEATAC WA	$	500
PATTERSON SERVICES, PO BOX, YELM WA	$	500
ROSEWAY CONSTRUCTION, NW KNAPP LANE, CAMAS WA	$	500
SOUTHGATE FENCE INC, HENDERSON BLVD, OLYMPIA WA	$	500
TEAM PERFORMANCE, N. KINGS RD., NAMPA ID	$	500
WAMSLEY, REX, W. I ST., SHELTON WA	$	500
Region 5 – Central Washington		
AUSERE, LEO, MOUNT DANIELS RD, WEST RICHLAND WA	$	500

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AVALOS, ANTHONY, TWANY LANE, WALLA WALLA WA	$	500
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	1500
KECK, ROY, BRONCO LANE, RICHLAND WA	$	1000
ORWA PROMOTIONS, SW. BROOK COURT, TIGARD OR	$	500
PILLAR DEVELOPMENT LLC, E LAKE STEVENS RD, LAKE STEVENS WA	$	1000
SPEEDLINE ENTERPRISES INC, CENTRAL AVE APT F2, WENATCHEE WA	$	500
THE GUNITE COMPANY, PO BOX, DUVALL WA	$	500
TRI-TOWN CONSTRUCTION, W. GAGE, KENNEWICK WA	$	500
WESTWAY SALES AND MARKETING, PO BOX, SUMMERLAND BC	$	500
Region 6 – Eastern Washington		
AUTO RAIN SPRINKLER CONTRACTING INC, N MARTIN, SPOKANE WA	$	500
DESIGN ELECTRIC, MANANA RD., DALLAS WA	$	1500
DON HALL GENERAL CONTRACTOR, MARIAH LN, REPUBLIC WA	$	500
KHIMICH, ANDREY, LA TOUR DR., SACROMENTO CA	$	500
LAMBCO REFRIGERATION INC, PO BOX, SPOKANE WA	$	500
PROFESSIONAL LIGHTING AND ELECTRICAL SERVICES, LLC, N. JOHNSON RD., COEUR D'ALENE ID	$	500
WOMBLE, RYAN, S COWLEY, SPOKANE WA	$	500
Central Office		
CAMERASCAN, PO BOX, NORTH BEND WA	$	1500
DEWAARD & BODE, INC., CORNWALL AVENUE, BELLINGHAM WA	$	1500
Violation – Hiring Uncertified Electricians		
Region 1 – North Puget Sound		
13 BUFFALO'S INC., DBA LACASSE CONSTRUCTION, GRAND AVE, EVERETT WA	$	250
ADT SECURITY SERVICES, NORTHCREEK PKWY N #105, BOTHELL WA	$	500
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	250
ETHAN ELECTRIC, AVENUE B, SNOHOMISH WA	$	50
GILLEN CONSTRUCTION, 212TH ST SW, LYNNWOOD WA	$	250
HOME THEATRE SPECIALTIES, ASH WAY, LYNNWOOD WA	$	500
MODULAR ELECTRIC INC, PO BOX, KIRKLAND WA	$	250
R & G CONSTRUCTION SERVICES INC, CALHOUN RD, MONROE WA	$	250
SONITROL PACIFIC, CALIFORNIA AVE, EVERETT WA	$	250
Region 2 – King County		
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	2000
WRIGHT GROUP EVENT SERVICES, EAST 48TH AVE., DENVER CO	$	750
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
AA SIDE X SIDE, SW 372ND ST., FEDERAL WAY WA	$	250
COMFORT MECHANICAL INC, S 220TH ST, KENT WA	$	250
DAY & NIGHT HEATING & COOLING, 112TH ST. S., LAKEWOOD, WA	$	0
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	750
HARBOR BUILDERS, CROMWELL DR. N. W., GIG HARBOR WA	$	500
MOUNTAIN ALARM, PO BOX, TACOMA WA	$	250
PUGET SOUND AUGER SERVICE, 207TH AVE E, SUMNER WA	$	250
SHAMP ELECTRICAL CONTRACTING, INC., W. 8TH STREET, PORT ANGELES WA	$	500
SUNSET ELECTRIC N.W. INC, PO BOX, POULSBO WA	$	750
WASHINGTON ENERGY SERVICES CO, THORNDYKE AVE W, SEATTLE WA	$	500
Region 4 – Southwest Washington		
ASSET PROTECTION PRTNRSHP LTD, 26TH AVE, FOREST GROVE OR	$	250
BEE ELECTRIC, PO BOX, BEAVERTON OR	$	250
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	250
HENKELS & MCCOY, JOLLY RD, BLUE BELL PA	$	250
HUNTER-DAVISSON INC, S.E. PERSHING ST., PORTLAND OR	$	250
INLAND ELECTRIC INC, SE BASELINE, HILLSBORO OR	$	250
NORTHWEST SUPPLY INC, SE INTERNATIONAL WAY, PORTLAND OR	$	250
R J ASHTON ELECTRIC LLC, PO BOX, VANCOUVER WA	$	250
SQUIRES ELECTRIC INC, PO BOX, PORTLAND OR	$	250
TEAM PERFORMANCE, N. KINGS RD., NAMPA ID	$	125
Region 5 – Central Washington		
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	750
DORSEY ELECTRIC INC, 7 NE LINDWOOD ST, EAST WENATCHEE WA	$	500
H.E. MILLS ELECTRIC COMPANY, IOWA ST., BELLINGHAM WA	$	250
HAWKEYE CONSTRUCTION INC, NE GRAHAM RD, TROUTDALE OR	$	250
IMAGE NATIONAL INC., E. AMITY RD, BOISE ID	$	250
INTERWEST TECHNOLOGY SYSTEMS, SNYDER, RICHLAND WA	$	500
MILLER AND SONS HEATING LLC, BAILEY RD, ZILLAH WA	$	250
MILLS JR., HOWARD, IOWA ST., BELLINGHAM WA	$	250
ORWA PROMOTIONS, SW. BROOK COURT, TIGARD OR	$	250
PALOUSE DRYWALL CONTRACTORS, N WASHINGTON ST, MOSCOW ID	$	250
PRAIRIE ELECTRIC INC, NE. 88TH ST, VANCOUVER WA	$	500
ROYSTON ELECTRIC, SE 254TH PL, KENT WA	$	1000
THE GUNITE COMPANY, PO BOX, DUVALL WA	$	250
TOTAL ENERGY MANAGEMENT INC, BUTLER LOOP RD, RICHLAND WA	$	500
Region 6 -		
AAA ELECTRICAL CONTRACTORS INC, W BURROUGHS RD, DEER PARK WA	$	250

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AZTECH ELECTRIC INC, E BROADWAY, SPOKANE WA	$	250
DESIGN ELECTRIC, MANANA RD., DALLAS WA	$	750
DON HALL GENERAL CONTRACTOR, MARIAH LN, REPUBLIC WA	$	100
INLAND METALS ELECTRIC LLC, 5TH ST, CLARKSTON ID	$	500
PFARR ELECTRIC LLC, N FOTHERINGHAM, SPOKANE WA	$	400
STERLING AV AND COMMUNICATIONS, N JEFFERSON, SPOKANE WA	$	1250
TAD GROPP ELECTRIC INC, PO BOX, SPOKANE WA	$	500
Central Office		
BRASHEAR ELECTRIC INC, COLUMBIA PARK TRAIL STE204, RICHLAND WA	$	200
HEAT N AIR TECHS, NE 59TH AVE, TACOMA WA	$	350
QUALITY HEATING & A/C LLC, SILVERDALE WAY, SILVERDALE WA	$	250
Violation – Uncertified Electrician		
Region 1 – North Puget Sound		
BAKER, CRAIG, HAM RD., FERNDALE WA	$	750
BONTRAGER, QUINCY, 54TH PL NE, MARYSVILLE WA	$	250
BRIDGMAN, SCOTT, 76TH ST. SE, SNOHOMISH WA	$	250
DEROSIER, SCOTT, 2ND AVE SE, BOTHELL WA	$	500
FORSBERG, JUSTIN, CALHOUN RD, MONROE WA	$	250
GILLEN, FRANK, 212TH ST SW, LYNNWOOD WA	$	250
GREINKE, JEFF, PO BOX, MILL CREEK WA	$	250
IRIGOYEN, ALBERTO, S AUBURN WAY #42, AUBURN WA	$	250
LACASSE, JOHN, GRAND AVE, EVERETT WA	$	250
LEVERETT, STEVEN, MAY CREEK PL, GOLD BAR WA	$	250
NURMI, TREVER, CENTER RD, EVERETT WA	$	500
PEREZ, CALLENTINO, WOODRIDGE AVE., MOUNT VERNON WA	$	250
SOLER, JOE, HICKOX ROAD, MOUNT VERNON WA	$	250
WALKER, JAMES, 19TH AVE NE, ARLINGTON WA	$	250
Region 2 – King County		
MARCHENKO, ALEX, S 301ST DR, AUBURN WA	$	250
MARCHENKO, SERGEY, S 301ST DR, AUBURN WA	$	250
MARTINEZ, DEFONSO, ,	$	250
O'BRIAN, DAVE, ,	$	250
SHEMEREKO, VASILIY, , FEDERAL WAY WA	$	250
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
BAKER, MARK, RALEIGH LN, PORT ANGELES WA	$	250
BUSTILLOS, JESSE, DIANE AVE, BUENA PARK CA	$	250
CARSON, EDWARD, MERIDIAN E., PUYALLUP WA	$	250
DAWSON, SHAWN, W. 9TH STREET, PORT ANGELES WA	$	250
FERRIS, MILTON, 115TH ST CT KPN, GIG HARBOR WA	$	500
KEYLON, CLYDE, 337TH ST. S., ROY WA	$	475
KREBS, CLINT, 8TH AVE S, ROY WA	$	250
LEGGETT, JIM, S.E. 29TH STREET APT C-21, VANCOUVER WA	$	250
MILLAR, MICHAEL, COSMOS LANE, PORT ANGELES WA	$	250
PACK, RONALD, 152 ST. E., PUYALLUP WA	$	250
ROBINSON, ROBERT, EMPIRE ST., POULSBO WA	$	500
SORENSON, BRADLEY, PO BOX, KINGSTON WA	$	250
STANTON, JESSE, 132ND ST KPN, GIG HARBOR WA	$	500
Region 4 – Southwest Washington		
BROGAN, TOM, SATSOP RIVIERA ROAD, ELMA WA	$	250
COLLINS, COREY, NE 5 ST., VANCOUVER WA	$	250
ESTILL, JEFFREY, S.E. HENDERSON ST., PORTLAND OR	$	250
GLASPIE, TOM, 2ND AVE, TUMWATER WA	$	250
GUNTHER, JEFFREY, N 13TH AVE, CORNELIUS OR	$	250
HALL, SARAH, N HAIGHT AVE, PORTLAND OR	$	250
HODSON, MICHAEL, S.E. BOARDMAN CT, MILWAUKIE OR	$	250
JOLMA, LUKE, NE 86 CIRCLE, VANCOUVER WA	$	250
KELLY, LANDRY, N 7TH STREET, MONTESANO WA	$	250
KERBEIN, KEVIN, GEKELER, BOISE ID	$	500
KOTEK, TROY, TOWERS RD #3, ASTORIA OR	$	250
KYLE, BRANDON, MARKCUM WAY, NAMPA ID	$	250
LAMAR, ROBERT, S. E. 122ND, PORTLAND OR	$	250
LAW, CHRISTOPHER, N.W. OVERTON ST., PORTLAND OR	$	250
LOVELL, DELBERT, VAIL LOOP & RUNYAN ROAD, RAINIER WA	$	250
MILLER, GRETCHEN, S 176TH ST #153, SEATAC WA	$	250
MONTIEL, JOHNATAN, PO BOX, AMBOY WA	$	250
PATTERSON, GARY, ,	$	250
PETERSON, RICHARD, NE 49TH AVE, HILLSBORO OR	$	250
PHILLIPS, CHRIS, S. PACIFIC, BOISE ID	$	500
SPYCHER, NICHOLAS, N HEREFORD AVE, PORTLAND OR	$	250
WAGONER, RICHARD, PO BOX, COLUMBIA CITY OR	$	250
Region 5 – Central Washington		
ATWOOD, RANDY, N WASHINGTON ST, MOSCOW ID	$	250
BROWN, RUSSELL, W. GAGE, KENNEWICK WA	$	250
CASTILLO, MIGUEL, PO BOX, ZILLAH WA	$	250

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CLEMETSON CONSTRUCTION SERVICES, SPIREA DR, WEST RICHLAND WA	$	250
EVERSON, MICHAEL, SENECA ST. S., WENATCHEE WA	$	250
FRIEND, KENNETH, PROVIDENCE AVE., MIDDLETON ID	$	250
GROOM, ROBERT, STINES HILL RD, CASHMERE WA	$	250
HELMS, BARRI, 1ST. STREET, WENATCHEE WA	$	250
HOLLAND, DANIEL, CEDAR AVE, RICHLAND WA	$	250
JOHANSEN, BRETT, PO BOX, ROSLYN WA	$	1000
KECK, ROY, BRONCO LANE, RICHLAND WA	$	500
MACIAS, RICHARD, SUMMITVIEW AVE #C, YAKIMA WA	$	1000
MCGUIRE, JAMES, 5TH ST, WENATCHEE WA	$	250
MILLER, NORMAN, NE QUAIL CT, HERMISTON OR	$	250
MORRIS, BENJAMIN, NE 290TH ST, LA CENTER WA	$	250
Region 6 – Eastern Washington		
AUSTIN, BOBBY, E 17TH, SPOKANE WA	$	1000
BUSH, JIM, N. 5TH, CHENEY WA	$	250
COLBY, TERRY, E BELFOUR CT, SPOKANE WA	$	250
CUEVAS, SAMUEL, N HOUK, SPOKANE WA	$	250
HALL, DONALD, MARIAH LN, REPUBLIC WA	$	250
HICKS, BRIAN, E 16TH, SPOKANE WA	$	250
HILL, TIM, E 7TH, SPOKANE WA	$	1000
KHIMICH, ANDREY, LA TOUR DR., SACROMENTO CA	$	250
LENTZ, DEL, BELLSTAR RD, CLAYTON WA	$	250
SPOON, CRAIG, PO BOX, MOYIE ID	$	1000
SQUIRE, EDWARD, E 5TH AVE, SPOKANE WA	$	250
YEAW, JAMES, W CLEVELAND, SPOKANE WA	$	100
Central Office		
CHAMBERS, ALAN, COLBY, APT. 6, EVERETT WA	$	500
CLARKE, JAMES, NE 24TH ST, TACOMA WA	$	1650
DOLPHAY, CRAIG, ORCAS DR, KENNEWICK WA	$	350
EHRLICH, STEPHEN, NE 103RD PLACE, PORTLAND OR	$	500
KAIKALA, JOSH, HARTFORD DRIVE, LAKE STEVENS WA	$	250
LOHMAN, KELLY, N POLK EXT #10, MOSCOW ID	$	500
NEKETIN, ROBERT, 124TH STREET E, PUYALLUP WA	$	250
PIDILLA, CHRISTOPHER, S FIFE ST, TACOMA WA	$	125
PUTNAM, RICHARD, PERCHERON DRIVE, PASCO WA	$	500
RUUD, RICKY, VALLEY AVE E, SUMNER WA	$	250
SHAHZAAD, SEAN, 8TH PL SW, FEDERAL WAY WA	$	250
ZAMORA, JOSE, 52ND AVENUE W, APT. E-10, LYNNWOOD WA	$	500
Violation – No Electrical Work Permit		
Region 1 – North Puget Sound		
13 BUFFALO'S INC., DBA LACASSE CONSTRUCTION, GRAND AVE, EVERETT WA	$	250
A & E ELECTRIC, E HOLLY ST, BELLINGHAM WA	$	250
ACT-ON-ELECTRIC, PO BOX, LYNWOOD WA	$	1250
ALBERTO SERVICES, AUBURN WAY S #42, AUBURN WA	$	250
ALLIED SAFE & VAULT CO INC, W 425 2ND AVE, SPOKANE WA	$	1000
AMERICA'S BEST HEATING & A/C, PO BOX, MILL CREEK WA	$	1250
ANDERSON, RICHARD, PO BOX, MUKILTEO WA	$	250
ARTISAN'S DESIGN & DEVELOPMENT, SR 527 SUITE, BOTHELL WA	$	500
AUTOMATED HOME SOLUTIONS, REDMOND WAY SUITE 100, REDMOND WA	$	250
BARLAS, ALI, HWY 99 S, EVERETT WA	$	250
BROADBAND UTILITY SPCLST INC, 107TH STREET SE, SNOHOMISH WA	$	250
CAJUN EXCAVATING INC, PMB 6141, MILL CREEK WA	$	250
CARTER PLACE INVESTMENTS, 129TH AVE NE, KIRKLAND WA	$	1500
CEJKA, BOB, 177TH PL. SE, BOTHELL WA	$	250
CURLEY ELECTRIC INC, 186TH PL SW 11, LYNNWOOD WA	$	250
DESIGN ELECTRIC, MANANA RD., DALLAS TX	$	250
ELDORADO DEVELOPMENT LLC, TORREY LANE, NAMPA ID	$	250
EMERALD CITY ELECTRIC, INC., 62ND PL W., LYNNWOOD WA	$	1000
ENTERPRISE INFORMATION SOLUTIONS INC., INDUSTRY DR, TUKWILA WA	$	250
FUERTEN, JAIME, 12TH PL. W., LYNNWOOD WA	$	250
GILLEN CONSTRUCTION, 212TH ST SW, LYNNWOOD WA	$	250
GSB ELECTRIC INC, 80TH AVE NW, STANWOOD WA	$	2000
HD ELECTRIC, NUGGET RD, GOLD BAR WA	$	1000
HERITAGE ENTERPRISES INC, PACIFIC AVE., TACOMA WA	$	250
HOME RUN ELECTRIC LLC, PO BOX, BOTHELL WA	$	2000
HOME THEATRE SPECIALTIES, ASH WAY, LYNNWOOD WA	$	2000
JIRA, JEFF, 7TH AVE NE, TULALIP WA	$	250
KAUFMAN ENGINEERED SYSTEMS INC., WTRVILLE MONCLOVA RD., WATERVILLE OH	$	250
LAKE STEVENS FIRE DEPARTMENT, CHAPEL HILL ROAD, LAKE STEVENS WA	$	250
MATSOLA, FEDOR, 19TH LN S #4, FEDERAL WAY WA	$	250
MRSNY, KC & LAUREL, 225TH PL SW, BOTHELL WA	$	250
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GUARDIAN SECURITY SYSTEMS INC, 1ST AVE. S., SEATTLE WA	$	500
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ABSOLUTE AIR INC, E HWY 101, PT ANGELES WA	$	1000
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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 10 No. 1** **January 2007**

Fee Reduction

A one year 5% temporary fee reduction became effective December 31, 2006. If you are using form F500-093-000 or F500-094-000 to calculate your fees it is important to download the new updated form. Download the new forms at http://www.lni.wa.gov/TradesLicensing/Electrical/FormPub.

The electrical program will continue to monitor and evaluate the budget in an attempt to maintain the fee reduction.

Mandatory "Classroom" Electrical Training Classes For All Trainees

A new law passed last year requires trainees to have at least 16 hours of approved basic "classroom" electrical training to be eligible to renew training certificate. Any trainee renewing after July 1, 2007 must meet the new requirement.

Basic classroom classes may be attended by electricians and administrators and used to satisfy the continuing education requirements necessary for renewal of their electrician or administrator certificate.

Classroom education is not the same as the continuing education classes required for electrician and administrator renewal. All basic classroom education training must be conducted in a classroom setting. Non-classroom correspondence and internet classes will not be allowed for trainees. During the class, each attendee will be tested on the class content and must receive a score of 70% or higher to successfully complete the class. Only department approved classes will be allowed.

Equivalent training classes taken as part of an approved apprenticeship program under chapter 49.04 RCW or an electrical training program under RCW 19.28.191(1)(h) will fulfill the classroom electrical training class requirement.

Education providers should review WAC 296-46B-970 before submitting a classroom education electrical training course to the department for approval. Classroom education classes must be on the RCW 19.28, WAC 296-46B, the currently adopted National Electrical Code or electrical theory based on currently published materials that are readily available through retail purchase. All classes are required to be at least 8 hours in length. Classes may be divided into intervals of not less than two hours each so long as the class is completed within a one month period.

"Grandfathering Opportunity" For Well Drillers Has Closed

The "Grandfathering" opportunity allowed by SSB 6225, a law relating to the business of installing, repairing, and maintaining domestic water pumping systems, expired on December 31, 2006. The "Grandfathering" opportunity allowed individuals to submit an affidavit of experience and receive plumbing and/or electrical certification without examination.

Provisions in SSB 6225 allow for an "open window" opportunity, to qualify previous work experience, through June 30, 2007. Affidavits of experience must be received no later than July 1, 2007. At that time all opportunities to apply previous "on the job experience" will expire. To gain work experience credit after that time, a worker must have a valid training certificate and work under the direct supervision of a properly certified individual while in the employment of a properly licensed contractor.

To take advantage of the open window opportunity individuals must fill out form F500-103-000 and submit it to L&I by the July 1, 2007 deadline. Please visit the link below to download form:

http://www.lni.wa.gov/TradesLicensing/Electrical/FormPub

WAC 296-46B Rules Are Effective

While the RCW remains unchanged, new WAC rules became effective December 31, 2006. For an overview of some of the more significant changes read the October 2006 electrical currents. View the new WAC 296-46B rules at:

http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/LawsRules

Printed copies of the new rules will be available for purchase by the end of January in all field offices.

● Leveling The Playing Field, Accomplishments For 2006

The electrical industry in Washington State is alive and well and has been running in high gear for several years now. Along with this abundance of work comes the potential for some companies or individuals to violate the licensing and installation laws. L&I is actively doing everything possible to reduce the impacts of the underground economy in the electrical industry.

As a result our electrical inspectors' efforts, assisted by the E-CORE team, we have had a successful year working proactively with the industry and combating companies and individuals not playing by the rules. For the 2006 calendar year the electrical program issued 5,572 electrical violations. Half of the 5,572 violations were unlicensed contracting, uncertified electricians, or doing work with no permit.

● Addendum To Class B Permit For Low Voltage And HVAC/R Controls

Last month's Electrical Currents article on the use of Class B labels contained the following sentence: *"However, if fire alarm inputs or outputs are not part of a "**required**" fire alarm system (i.e. options to a dwelling's low voltage security system) these installations would be eligible for the Class B permit (refer to December 2005 Electrical Currents Article)."*

The use of the word "required" was confusing to some people who concluded that if the installation was not required by a building official, then a Class B permit would suffice. This is not true. The WAC requires a standard permit to be used for all wiring and equipment associated with any of the excluded systems (fire alarm, nurse call, lighting control, industrial automation/control, or energy management). These circuits are not eligible for Class B labels.

● Square D Recalls Safety Switches Due To Shock Or Electrocution Hazard

The U.S. Consumer Product Safety Commission (CPSC), in cooperation with Square D Company announced a voluntary recall of General Duty Safety Switches. The CPSC determined that the safety switch can continue to supply electricity even after being placed in the "OFF" position. This poses the risk of an electric shock or electrocution hazard. Consumers should stop using recalled products immediately unless otherwise instructed by the CPSC. Contact Square D at www.us.squared.com or (877) 202-9046.

The recall includes General Duty 30 and 60 ampere, 240 volt, 1-phase and 3-phase NEMA 3R safety switches. The switches are typically used to control the flow of electricity to outdoor motorized units that are hardwired to an electrical system such as outdoor air conditioning and heating (HVAC) equipment. The switches contain "ON" and "OFF" positions. The "OFF" position is designed to cut the flow of electricity to an outdoor motorized unit to protect the person who is servicing the unit.

The recalled switches have the following date codes and catalog number printed on the bottom of the wiring label inside the front cover or on the bottom of the package label:

Date Codes - 06371 through 06446

Catalog Numbers - D211NRB, D211NRBBP, D211NRBCP, D221NRB, D221NRBCP, D321NRB, D321NRBCP, DU221RB, DU222RB, DU321RB, DU322RB.

● Electrical Question of the Month

This Month's Question: Temporary electrical power and lighting installations shall be permitted for a period not to exceed __ days for holiday decorative lighting and similar purposes? **A)** 30, **B)** 60, **C)** 90, **D)** until it's no longer needed.

Last Month's Question: Control circuit transformers rated less than ____ volt-amperes (VA) and that are an integral part of the motor controller and located within the motor controller enclosure shall be permitted to be protected by primary overcurrent devices, impedance limiting means, or other inherent protective means. **A)** 50, **B)** 75, **C)** 100, **D)** 250. The answer is: **A** [**NEC 430.72 (c)(3)**].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 12** **December 2006**

● LAST CHANCE! For 03 or 03A "Grandfathering"

Limited Plumbing Certificate for Pump Installers Without an Exam

Plumber-Electrician or Electrical Administrator Certification

Application Deadline Is December 31, 2006

A new law requires electrical and plumber worker certifications for all pump installation work on domestic drinking water and irrigation water systems. This includes the placement of an electric pump motor into a well without proper worker electrical and plumbing certification.

The new law does not cover pumps in other water systems, within appliances, or when associated with pools, spas, hydronic heating, domestic system circulating pumps, waste water or septic systems, etc.

If you have domestic or irrigation pumping system experience, you should submit an electrician/plumber application and documentation of your experience no later than December 31, 2006. If you have 03 or 03A electrical certification and you also perform associated mechanical/piping (plumbing) as part of this work, you must now apply to receive plumber certification if you want to continue doing the plumbing work. Plumbing examples include: pumps, integral pump/motor units, piping, pressure tanks, valves, sensors or devices within the piping, etc. If you only work on the electrical equipment and do any plumbing work, you do not need plumbing certification.

Individuals who apply, but do not have the all the required experience will be able to get credit for the experience they have. If you have experience in the pumping industry, you should apply and get credit for your experience.

Individuals, working in the pumping industry, who do not apply before the December 31, 2006 deadline, must work for a registered contractor as an electrical/plumbing trainee under the supervision of certified electrician/plumber until the required hours are accumulated.

Details on qualifying for certification were published in the July 2006 edition of the *Electrical Currents*. You can get a copy on the electrical website at:

http://listserv.wa.gov/archives/electrical.html

Applications for contractors (F500-104-000), electrician-plumbers (F500-102-000), and pumping industry trainees (F500-103-000) are available online at the Forms & Publications link on our homepage at:

http://www.lni.wa.gov/TradesLicensing/Electrical

If you have other questions, you may email outreach@Lni.wa.gov, call 1-800-706-5631, or if you have specific questions you may contact Roger Chick, Outreach Coordinator, until December 31st at: (360)-902-5249 (message line), 360-292-5825 (cell phone).

● Temporary Fee Reductions Effective December 31, 2006

The WAC revisions effective December 31, 2006, will include permanent and temporary fee schedules. The temporary fee schedules lower permit, licensing and certification fees by about 5%. The reduced permit fees are projected to be effective until December 31, 2007. The licensing reductions will remain in place long enough to allow all electricians an opportunity to use the reduction one time. We will monitor the electrical fund balance to make certain this reduction does not have a negative impact on the program.

Electrical Program Customer Survey

All stakeholders are encouraged to take the time to fill out this very important annual Customer Service Survey regarding your interaction with the Labor and Industries Electrical Program. We need you help to be able to improve our service to you. The survey is easy to take, completely anonymous and will only take about five minutes of your time.

In order to reach as many people as possible, the survey is offered online. Links are available at several locations on the electrical website or you may directly use this link:

http://www.surveymonkey.com/s.asp?u=531322969923

Reciprocity with Texas

We are pleased to announce that Texas has become the newest state to enter into a journeyman electrician reciprocal agreement with the State of Washington. Washington State has reciprocity agreements with Alaska, Arkansas, Colorado, Oklahoma, Massachusetts, Minnesota, Montana, Nebraska, New Hampshire, New Mexico, North Dakota, South Dakota, Texas, Wyoming and Utah. All reciprocity agreements are limited to (01) general journeyman electricians.

Texas currently certifies 40,000 journeyman electricians. The department is in the process of sharing examinations with some of the reciprocal states in an attempt to create uniform electrician tests.

What Electrical Contractors Need To Know About Townhouses, Apartments, and Condominiums—Part 2: Wiring Methods

Part 1 of this article established that townhouses are single-family dwellings. Though townhouses may appear similar to apartment or condominium buildings, they are not the same. Each townhouse is a separate building. Even though the building exterior walls may be in contact with each other, each townhouse's legal property lines separate it from adjacent townhouses.

Multifamily dwellings (apartments and condominiums) and two-family dwellings (duplexes) are single buildings with multiple occupancies within the same building. Since wiring methods for multifamily and two-family dwellings have been specifically covered in the NEC and electrical rules for many years, this article will not cover them. We will only address the wiring methods of townhouses.

NEC 230.2 requires a building "*shall be supplied by only one service*" and none of the permissions for more than one service in (A)-(D) may be applied to townhouses. NEC 230.70(A)(1) says, "*The service disconnecting means shall be installed at a readily accessible location outside of a building…or inside nearest the point of entrance of the service conductors.*" WAC 296-46B-230(12) clarifies "nearest the point of entrance" as 15' inside or outside the building.

The NEC does not allow a building's service disconnect to be located on another owner's building or property. NEC 230.3 prohibits service conductors to a building from passing through the interior of another building. NEC 230.6 allows conductors to be considered "outside" a building:

- Where they are installed under not less than 2'' of concrete (slab) beneath a building,
- Where they are within a building, installed in a raceway surrounded on all sides with not less than 2" of concrete,
- Where they are within an electrical vault meeting the requirements of NEC 450, or
- Where they are installed in conduit and buried under not less than 18" of earth beneath a building.

If the serving utility wants to have grouped metering equipment for townhouses, contractors should be considering using a pedestal mounted service pack with separate feeders to each townhouse or some other method that does not include mounting the service equipment on an adjacent townhouse. Electrical utilities normally use easements from property owners to establish the access they need to reach the service point.

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● Fall Stakeholder Meetings

Fall stakeholder meetings were held in 13 locations statewide during September, October and November. Stakeholder attendance was lower than in past years.

These annual meetings have proven to be an important tool in communicating with the electrical industry, and offer an opportunity for our customers to ask questions directly to the Electrical Program and get instant feedback. We encourage all our customers to stay involved and attend these important annual meetings.

● What To Do With Unlisted Industrial Utilization Equipment

If you have a piece of industrial utilization equipment that is not listed, the inspector will issue a correction requiring the equipment to be listed or otherwise approved for use in Washington. The correction will be for W*AC 296-46B-010(9), saying, "In order to meet minimum electrical safety standards for installations, all materials, devices, appliances, and equipment, not exempted in chapter 19.28 RCW, must conform to applicable standards recognized by the department, be listed, or field evaluate."* If you or your customers get this correction, you have several ways to clear this correction and be compliant with the law and rules.

WAC 296-46B-030 has clear definitions of what "industrial utilization equipment" is. In general terms, it is equipment located in a manufacturing facility that is directly used in a manufacturing process to make or process a raw product into a finished product for sale. Specific definitions for industrial utilization equipment are located in WAC 296-46B-030 (1).

Option One: A **Field Evaluation** may be performed on the equipment. Only a Washington approved product testing lab can do a field evaluation. The laboratory doing the field evaluation must request permission from the Chief Electrical Inspector before performing the evaluation. After the laboratory has approved the equipment, they will forward the evaluation results to their customer, the local inspection office and the Chief's office. For a list of all currently approved testing labs visit:

http://www.lni.wa.gov/TradesLicensing/Electrical/Install/ProdTest.

Option Two: A **Normal Department Inspection** may be performed when all the electrical components used in the equipment have a listing mark from an approved laboratory and the equipment is wired in accordance to the National Electrical Code (NEC). Nearly all equipment manufacturers use "recognized" instead of "listed" components when manufacturing. This practice normally rules out the possibility of a normal department inspection.

Option Three: A **Department Evaluation** can be performed on the equipment. In order to perform a department evaluation the manufacturer must provide the equipment's owner a letter containing all eight items detailed in WAC 296-46B-030(2)(c)(i). The owner of the equipment is responsible for obtaining the letter from the manufacturer. The owner must then submit the letter to the Chief Electrical Inspector's office for review and final approval. If the equipment has been modified since it was manufactured, this option cannot be used. The department charges an hourly rate for the review of the manufacturer's letter. If a visit to view the equipment is necessary, the time for the visit will also be charged at the hourly rate. If you have any questions or need assistance in determining if your equipment qualifies please contact David Myers at (360) 902-5967 or myee235@lni.wa.gov. The department will not offer this option after July 1, 2007.

Option Four: An Engineer, approved by the department can perform an **Engineering Evaluation** on the unlisted industrial utilization equipment. The engineering evaluation option was added in June 2006. An engineer approved by the department will be able to perform the same function as the department in evaluating the equipment and determining if the standard is appropriate and the equipment can be approved. The engineer can accelerate the review process by working directly with the manufacturer. If the equipment has been modified, the engineer may require additional inspection or documentation before approving the equipment.

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● Class B Permit Clarifications Concerning Low Voltage and HVAC/R Controls

We continue to receive questions pertaining to when a Class B permit may be used in place of a general permit. The Class B permit was created to be used in place of a standard permit. It is a way to reduce the cost of installations without jeopardizing public safety. Recognizing that the type of work covered under the Class B requires minimal electrical circuit modifications or has limited exposure hazards, a random inspection process is used. WAC 296-46B-110(6) through 110(10) contains the rules regarding the application of Class B permits.

Regarding low voltage installations a HVAC/R contractor asks: "I understand that I can replace a 24 volt Class 2 or 3 control panel utilizing a Class B permit. Can I also use a Class B permit for the installation of an HVAC/R thermostat and its associated wiring on the same job?"

The answer is "YES" a Class B permit may be used so long as the work is done at the same time. WAC 296-46B-110(10)(a)(iii)(C) allows for the installation of any one or all items included in the Class B allowed list.

Another contractor asks: "Can I use a Class B permit for the installation of Class 2 or 3 smoke/fire damper actuators, and other associated Class 2 or 3 low voltage controls in a required fire alarm/control system?"

The answer is "NO". WAC 296-46B-110(10)(b)(iv) does not include allow Class B permits for any work in: Fire alarm, nurse call, lighting control, industrial automation/control, or energy management systems. However, if the fire alarm inputs or outputs are not part of a "required" fire alarm system (i.e. optional to a dwelling's low voltage security system) these installations would be eligible for the Class B permit. Refer to December 2005 *Electrical Currents* for more information. Because of the life safety issues surrounding fire alarm, nurse call, lighting control, industrial automation/control or hazards associated with energy management systems, the random inspection process cannot be employed. It is essential to insure that these systems are inspected.

● Electrical Question of the Month

This Month's Question: Control circuit transformers rated less than ____ volt-amperes (VA) and that are an integral part of the motor controller and located within the motor controller enclosure shall be permitted to be protected by primary overcurrent devices, impedance limiting means, or other inherent protective means.
A) 50, **B)** 75, **C)** 100, **D)** 250.

Last Month's Question: Disregarding exceptions, overcurrent protection for conductors 14 AWG and larger in a Class 1 Circuit shall be provided in accordance with the conductor ampacity, without applying the derating factors of NEC 310.15 to the ampacity calculation. Overcurrent protection shall not exceed ___ amperes for 18 AWG conductors and ___ amperes for 16 AWG. **A)** 6 and 8, **B)** 7 and 10, **C)** 7.5 and 10, **D)** 14 and 18 The answer is: **B)** [**NEC 725.23**].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 11** **November 2006**

Classification Of A Building Or Area

Who determines what a given building's or space's classification should be (e.g. place of assembly, occupancy, hazardous location)?

The 2005 NEC says: The Authority Having Jurisdiction (AHJ) is the organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure. The phrase "authority having jurisdiction" is used in NFPA documents in a broad manner, since jurisdictions and approval agencies vary, as do their responsibilities.

Where public safety is primary, the AHJ may be a federal, state, local, or other regional department or individual such as a fire chief; fire marshal; chief of a fire prevention bureau, labor department, or health department; building official; electrical inspector; or others having the authority and responsibility in statute or ordinance.

Department electrical inspectors will not define a building's classification. If the design and construction methods of the project raise doubts about classification (e.g. assisted living, nursing home, patient care areas, child care, institutional occupancy, educational occupancy, assembly occupancy for 100 or more persons, any hazardous location, etc.), the electrical inspector may require documentation from the AHJ regulating the occupancy. Likewise, the electrical inspector may require documentation from the owner verifying that a building will **not** be used in a specific manner before the building electrical construction and wiring methods can be approved.

Use Of Couplings On A Service Or Other Mast

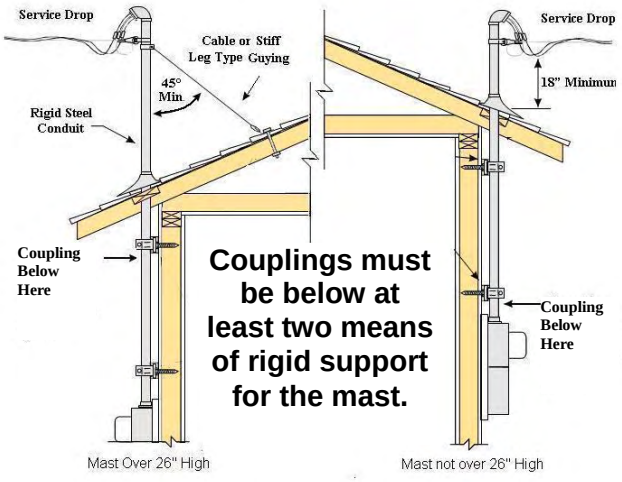
Where can a coupling be used on a mast supporting overhead conductor spans? Couplings can only be installed below two means of rigid support for the mast. A properly installed cable or stiff leg type guying qualifies as one of the two required means of support. The intention is to have an un-spliced section of rigid steel galvanized conduit securely fastened in two separate places to withstand any strain that may be placed on the mast. Any couplings installed without adequate support can create a weak point in the mast system, especially in conditions of high winds, damage from trees, where there is ice buildup, or other abnormal loading on the conductors and mast. See the drawing below for acceptable coupling placement.

Additional requirements for masts:

All overhead drops for services, feeders or branch circuits exceeding # 1 AWG aluminum or # 3 AWG copper must be rigid steel galvanized conduit no smaller than two (2) inches.

All overhead drops for service, feeder or branch circuits not exceeding #1 AWG aluminum or #3 AWG copper must be rigid steel galvanized conduit no smaller than one and one-quarter inch.

Mast installations must comply with drawings E-101 and/or E-102 from WAC 296-46B-230, or must provide equivalent strength by other approved means. Masts for altered or relocated installations will be permitted to comply with drawing E-103 from WAC 296-46B-230.



Mercury Lamps And Thermostats MUST Be Recycled

Fluorescent lamps and mercury thermostats are regulated as federal and state Universal Wastes (i.e. they must be recycled or handled as hazardous waste. In Washington State, keeping mercury out of the environment is a high priority. Mercury-contaminated fish were found in every lake and river sampled by the State of Washington in 2002. More than half of the 185 fish tested had potentially unsafe levels of mercury. This fall, mercury concentrations in Puget Sound Chinook salmon resulted in a fish-consumption advisory for the species. Keeping mercury out of the environment helps protect fish and the people who eat them.

Where to recycle lamps and thermostats: Fluorescent lamps may be shipped or mailed to recycling facilities. They are listed at www.govlink.org/hazwaste/business/wastedirectory/ (select 'Fluorescent lamps'). In addition, some suppliers and retailers offer drop-off sites for lamps. For a list of these firms, go to www.takeitbacknetwork.org . Most heating equipment suppliers provide *free* drop-off sites for mercury thermostats. In addition, the Thermostat Recycling Program (TRC) provides contractors with their own recycling bins. TRC covers shipping and recycling costs and provides replacement bins. For more information, go to www.govlink.org/hazwaste/business/wastedirectory/ (select 'Thermostats').

What Electrical Contractors Need To Know About Townhouses, Apartments, And Condominiums

Residential structures defined as "Townhouses" are rapidly increasing in popularity in the Washington construction industry. Electrical contractors need to be aware of some costly mistakes (permit fees, construction methods, etc.) that can be involved in treating these projects as two-family (duplexes) or multifamily dwellings. Townhouses are not two-family or multifamily dwellings. When you properly provide service to these structures you must apply the NEC and WAC rules based on the type of building construction and occupancy specified in the building permit, not what they "look" like.

To help you recognize what residential building type you are wiring (i.e. single-family, two-family, multifamily), we will cover this subject in two parts. Next month we will discuss installation requirements related to providing power to these dwelling units.

Basic Construction Definitions

Single-family dwellings, two-family dwellings, and multiple single-family dwellings (townhouses) are covered by the International Residential Code (IRC). The IRC is adopted in Washington and is supplemented by the mechanical, fire, ventilation & indoor air quality, energy, plumbing, and electrical codes. The IRC defines a townhouse as "*A single-family dwelling unit constructed in a group of three or more attached units in which each unit extends from foundation to roof and with open space on at least two sides*." We have found some building officials are allowing two-unit townhouses with separate ownership and property lines dividing the two attached units.

IRC R317.2—Townhouses further states each townhouse shall be considered a separate building and shall be separated by fire-resistance-rated wall assemblies of not less than one-hour fire-resistive-rating with exposure from both sides for exterior walls with a fire separation distance less than three feet. By exception, a common 2-hour fire-resistance-rated wall is permitted for townhouses if such walls do not contain plumbing or mechanical equipment, ducts or vents in the cavity of the common wall. (Note: Proposed Amendments to the IRC may allow the fire-resistance rating of the common wall to be reduced to 1-hour provided the building is equipped throughout with an automatic sprinkler system and the common wall does not contain plumbing or mechanical equipment, ducts or vents, and electrical, cable, and telephone installations are installed in raceways and metallic outlet boxes.)

All multifamily dwellings (apartments, condominiums) are covered by the International Building Code (IBC). The IBC does not differentiate between condominiums and apartments; they meet the same building construction requirements. Both fall under IBC 310.1-Residential Group R-2 as residential occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent (non-transient) in nature. Typically, walls separating R-2 occupancies shall have a fire-resistance rating of 1-hour (½-hour if the building is equipped throughout with an automatic sprinkler system).

Townhouses, Duplexes, Apartments, and Condominiums

Confusion about townhouses exists in all aspects of the building industry. AHJs in Washington and across the country have sometimes been inconsistent in dealing with townhouses.

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The NEC does not address townhouses as a specific entity. Previous department fee interpretations have been based on dwelling property ownership rather than building construction criteria. Because of building definition changes in the IRC, dwelling units must be categorized as closely as possible to NEC definitions (i.e. singe-family, two-family, and multifamily dwellings) based on the construction definitions of the IRC and IBC above.

- **Single-family dwellings** – Fee calculations are based on square footage with additional line-item fees for common additional features for dwellings such as outbuildings, detached garages, swimming pools, hot tubs and spas, and septic pumping systems.
- **Townhouses** – **Are single-family dwellings**. A separate permit is required for each unit. Each unit will have a distinct address and legal property lines that separate it from adjacent units. These may be zero-clearance lot lines that extend perpendicular, earth through rooftop. Fee calculations are based on square footage, with additional line-item fees like all other single-family dwellings.
- **Two-family dwellings (duplexes)** – Fee calculations are based on the combined square footage with additional line-item fees for common additional features such as outbuildings, detached garages, swimming pools, hot tubs and spas, and septic pumping systems. These are single buildings with two separate dwelling units (e.g. apartments, condominiums, etc.).
- **Multifamily dwellings** – Are single buildings that contain three or more dwelling units (e.g. apartments, condominiums, etc.). Since the building codes do not differentiate between apartments and condominiums in R-2 construction requirements or fire separations, the department will not longer consider them different in the permit fee structure. A condominium dwelling unit is as inseparable from the whole building as an apartment dwelling unit. There are no differences in the wiring methods required.

  Permit fees will be based on the service size and number of feeders required to distribute power to the units. Permit fees for other residential systems or structures that serve a direct accessory function to the dwelling unit occupancies will also be based on the service size and number of feeders required to distribute power. Any nonresidential or commercial-type occupancy will need to have a separate permit from the commercial section of the fee schedule.

Before you bid or begin wiring these types of residential buildings be certain you know how the structure is classified by the building official on the building permit and the stamped plans available on the jobsite. Real estate marketing can be deceptive. Terms like “town homes” or “condo lifestyle” may generate consumer interest, but have no relevance to the classification of the building. The costs of rewiring services or feeders to these units to conform to the proper electrical installation requirements can be great. There will be more on this topic next month.

● Electrical Question of the Month

This Month’s Question:

Disregarding exceptions, overcurrent protection for conductors 14 AWG and larger in a Class 1 Circuit shall be provided in accordance with the conductor ampacity, without applying the derating factors of NEC 310.15 to the ampacity calculation. Overcurrent protection shall not exceed ___ amperes for 18 AWG conductors and ___ amperes for 16 AWG.

A) 6 and 8, **B)** 7 and 10, **C)** 7.5 and 10, **D)** 14 and 18

Last Month’s Question: A solar photovoltaic system is being added to an existing single phase, 200 amp, single family dwelling service to help supplement the dwelling’s energy consumption. The electrician decides to connect the feeders from the DC-AC inverter to the load side of the panel’s service disconnecting means through a dedicated two-pole circuit breaker. What is the maximum standard size (amps) circuit breaker that can be installed for this 14kW system? **A)** 40 amps, **B)** 50 amps, **C)** 60 amps, **D)** 70 amps. The answer is: **A)** [NEC 690.64(B)(2) Exception]. (200A bus x 120% = 240A) (200A Service Disconnect + **40A** maximum dedicated PV circuit breaker)].

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Final Judgments of Electrical Laws
For the 3rd Quarter of 2006

Violator		Penalty
Violation – No Electrical Contractor's License		
Region 1 – North Puget Sound		
A H A SERVER & NETWORK CONSULTING, SMOKEY PT BLVD, ARLINGTON WA	$	500
BAGAOISAN, FERNIE, NE 120TH ST, SEATTLE WA	$	500
BARREDO, (BESSIE) NIEVES, PEACE PORTAL DR., BLAINE WA	$	500
BD COMMUNICATIONS, WELCH PLACE, MANSFIELD TX	$	3,000
BECKHEYER, FRED, MEREDITH DRIVE, BAXTER MN	$	500
BERGSAGEL CONSTRUCTION INC., 27TH DR. S.E., EVERETT WA	$	200
D J MECHANICAL INC., 119TH AVE NE, LAKE STEVENS WA	$	500
DARITECH INC., BENSON ROAD, LYNDEN WA	$	500
DREAMTECH, S 336TH ST., FEDERAL WAY WA	$	500
HARDISTY, CHRIS, 208TH PL. S.W., LYNNWOOD WA	$	500
I & S DIRT WORKS, WHITE CHUCK PL, GRANITE FALLS WA	$	500
KHONGSAVANH, KHAMTA, PO BOX, INDEX WA	$	500
MECHANICAL AIR, 20TH ST. SE, EVERETT WA	$	500
PERCIVAL SCIENTIFIC, RESEARCH DRIVE, PERRY IA	$	500
PIONEER DOOR INC, 196TH ST SE, LYNNWOOD WA	$	500
POS SOLUTIONS INC., TAYLOR DRIVE, EVERETT WA	$	1,000
POWER HOUSE ELECTRIC, 420TH AVE. SE, NORTH BEND WA	$	500
PUGET HOMES CORPORATION, 136TH AVE NE, KIRKLAND WA	$	500
RASBAND HOMES & ASSOCIATES INC, MARKET PL, LAKE STEVENS WA	$	500
RAY'S PLUMBING AND HEATING, PO BOX, REDMOND WA	$	500
SAMMY ELECTRONIC, WISH AVENUE, ENCINO CA	$	3,000
STEVENS, VERNON, SNEEOOSH RD, LA CONNER WA	$	500
SUPERIOR SERVICE ELECTRIC, 80TH DR NE, MARYSVILLE WA	$	500
SUPERIOR SERVICE ELECTRIC LLC, 45TH AVE SE, BOTHELL WA	$	500
TECHNICAL SYSTEMS INC, 196 ST., LYNNWOOD WA	$	500
WHITNER, BARRIE, VIRGINIA AVE, EVERETT WA	$	500
ZERFOSS, DEE, LEXINGTON AVE., EVERETT WA	$	500
Region 2 – King County		
A H A SERVER & NETWORK CONSULTING, SMOKEY PT BLVD., ARLINGTON WA	$	1,000
A J ENTERPRISES, ELIZABETH LANE, SEQUIM WA	$	3,000
A&J SPA WORKS, NE 5TH AVE., OAK HARBOR WA	$	500
BD COMMUNICATIONS, WELCH PLACE, MANSFIELD TX	$	6,500
BOHAG, WILFORD, NE 88TH ST, SEATTLE WA	$	1,000
CHAMBLISS, ALAN, 14TH PL. SW, FEDERAL WAY WA	$	1,000
DREAMTECH, S 336TH ST, FEDERAL WAY WA	$	500
EXTREME SECURITY, STATE ROUTE 92, LAKE STEVENS WA	$	7,000
FRANK COLUCCIO CONST CO, M L KING JR WAY S, SEATTLE WA	$	200
FURNITURE FACTORY DIRECT, S. 72ND STREET, TACOMA WA	$	500
HANDYMAN SERVICES, S 194TH ST, SEATTLE WA	$	500
HENSLEY CONSTRUCTION, BAMBERG LN SE, OLYMPIA WA	$	500
HOME IMPROVEMENT HELP INC, 228TH AVE SE, SAMMAMISH WA	$	500
LAFAYETTE ENGINEERING, LETTON DRIVE, DANVILLE KY	$	500
MEDINA, CHUCK, CALIFORNIA AVENUE, SEATTLE WA	$	500
O'NEILL, TIMOTHY, 5TH AVE NE, SEATTLE WA	$	500
ROWLEY, BRUCE, 219TH PL SE, BOTHELL WA	$	500
SAMMY ELECTRONIC, WISH AVENUE, ENCINO CA	$	5,000
SEATTLE DVR INC., 4TH AVE. S, SEATTLE WA	$	500
UNITED MAINTENANCE GROUP, S 170TH ST., SEATAC WA	$	500
WILSON ENTERPRISES, 165 AVE SE, BELLEVUE WA	$	500
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
A+ CONSTRUCTION CO., 113TH ST. CT. E., SUMNER WA	$	500
ABOVE THE BOARD CONSTRUCTION, 184TH STREET EAST, TACOMA WA	$	500
BD COMMUNICATIONS, WELCH PLACE, MANSFIELD TX	$	2,500
ENZENAUER, GERALD, KIWI LANE, SEQUIM WA	$	500
FOX'S REMODELING & ROOFING, ORCAS, PORT ANGELES WA	$	500
GARMIRE, ROBERT, GLENHAVEN RD., ANDERSON ISLAND WA	$	500

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GOODEN, JR., ALLEN, 12TH AVE S , SEATTLE WA	$	500
HAROLD LEMAY ENTERPRISES INC, PO BOX, TACOMA WA	$	500
JENS, WILLIAM, 247TH AVE. N.E., REDMOND WA	$	500
LOGAN ELECTRIC LLC, S. D ST., TACOMA WA	$	500
MOORE, JAMES, PO BOX, KEYPORT WA	$	500
PHAM, KENNETH, PO BOX, TACOMA WA	$	500
ROBERTS, JOHN, KIOWA TRAIL, FOX ISLAND WA	$	250
SAMMY ELECTRONIC, WISH AVENUE, ENCINO CA	$	3,500
SEAVIEW CONSTRUCTION, PO BOX, CARLSBORG WA	$	500
Region 4 – Southwest Washington		
A & E SECURITY AND ELECTRONIC SOLUTIONS, NORTH HIGHWAY 99W, MCMINNVILLE OR	$	500
A H A SERVER & NETWORK CONSULTING, SMOKEY PT BLVD., ARLINGTON WA	$	1,000
ADVANCED HEATING & AIR CONDITIONING INC., SE FOSTER RD., PORTLAND OR	$	500
AIR TEMPERATURE PROS LLC, PO BOX, YELM WA	$	500
ANAPA CONSTRUCTION INC, NE 304 AVE, WASHOUGAL WA	$	500
ANGUIANO, TABITHA, PO BOX, AMBOY WA	$	500
BD COMMUNICATIONS, WELCH PLACE, MANSFIELD TX	$	1,500
CORNERSTONE BUILDERS INC., SW 156TH AVE, BEAVERTON OR	$	500
JARVIS, KEN, 116TH AVE, PUYALLUP WA	$	500
K & C HOME TEK CONST INC, SE 39TH ST, VANCOUVER WA	$	500
LEON, ROBERT, N 31ST, TACOMA WA	$	1,000
MERLE, DANIEL, NW 127 ST., VANCOUVER WA	$	500
MOHAMMED, PHILLIP, 70TH AVENUE W, UNIVERSITY PLACE WA	$	500
NAYDEN LLC, PO BOX, VANCOUVER WA	$	1,000
NORTHWEST CRANE SRV & PARTS CO, NE 42ND AVE, PORTLAND OR	$	500
SALOKAR, JEFF, PO BOX, PORT ORCHARD WA	$	500
SAMMY ELECTRONIC, WISH AVENUE, ENCINO CA	$	500
STEWART, DAVID, AUGUSTA AVE., DESERT HOT SPRINGS CA	$	500
SYMMETRY CONSTRUCTION SERVICES CORP, N. W. CORNELL RD, HILLSBORO OR	$	500
VIKING HEATING INC, PO BOX, GRESHAM WA	$	500
WHITE LIGHTNING ELECTRIC, S.E. 52ND AVE., PORTLAND OR	$	3,250
WINSTON, JOHN, 80TH AVE CT E, PUYALLUP WA	$	500
Region 5 – Central Washington		
MEHARRY, LAUREN, PANRAMA DRIVE NE, MOSES LAKE WA	$	500
MOBLEY, TROY, 109TH AVE CT E, PUYALLUP WA	$	500
NATURE LIKE CONSTRUCTION, W. SHOSHONE, PASCO WA	$	500
STURGILL CONTRACTING, S. PARK ST., WALLA WALLA WA	$	500
WILSON, LIONEL, , PATEROS WA	$	500
Region 6 – Eastern Washington		
APEX COMPUTER SERVICES, N MCDONALD ST, MELISSA TX	$	500
B & B POOL CLEANING SERVICE, 13TH STREET, LEWISTON ID	$	500
BENNETT HEATING & AIR CONDITIONING, N ALTAMONT, SPOKANE WA	$	500
D & D HEATING A/C SHEET METAL INC, COMMERCE LOOP, POST FALLS ID	$	500
DBE DATACOM INC, EL TORO RD, LAKE FOREST CA	$	500
EMPIRE IRRIGATION & CSTM LNDSP, W. GORDON, SPOKANE WA	$	500
K B M HANDYMAN SERVICES, W BUNKER RD, CHENEY WA	$	500
MAC INDUSTRIES INC, AQUA CIRCLE 2, COEUR D' ALENE ID	$	500
MCKENNA, DAN, PITTSBURG, SPOKANE WA	$	500
NORTH IDAHO PUMP CO INC, PO BOX, POST FALLS ID	$	750
RAIN DANCE PROPERTY MAINTENANCE INC, N GOVERMENT WAY, HAYDEN LAKE ID	$	500
RNT CONSTRUCTION LLC, EAGLE NEST CT, DAVENPORT WA	$	500
ROHDE, STEVE, COPENHAVEN RD N, CRESTON WA	$	500
RUE, STEPHEN, E 13TH AVE, SPOKANE WA	$	500
WEST TECH INDUSTRIES, GRELLE AVE, LEWISTON ID	$	500
Central Office		
ALL CLIMATE HEATING & A/C INC., NE 95TH, REDMOND WA	$	500
C L ELECTRIC INC., NE 34 WAY, VANCOUVER WA	$	500
SECURITY ONE INC., S PINE ST, TACOMA WA	$	18,000
TRITON ELECTRICAL SERVICES LLC, PO BOX, LAKE STEVENS WA	$	500

Violation – Hiring Uncertified Electricians

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Region 1 – North Puget Sound

A H A SERVER & NETWORK CONSULTING, SMOKEY PT BLVD., ARLINGTON WA	$	250
ALL WAYS AIR CONTROL INC, S. CENTER ST, TACOMA WA	$	250
ANANDA SEATTLE MANIOR TRUST, ROOSEVELT WAY NE, SEATTLE WA	$	250
BARREDO, (BESSIE) NIEVES, PEACE PORTAL DR., BLAINE WA	$	500
BD COMMUNICATIONS, WELCH PLACE, MANSFIELD TX	$	1,250
BERGSAGEL CONSTRUCTION INC., 27TH DR. S.E., EVERETT WA	$	600
BORGMAN ELECTRIC INC., 323 AVE. SE, SULTAN WA	$	250
D J MECHANICAL INC., 119TH AVE NE, LAKE STEVENS WA	$	250
DARITECH INC., BENSON ROAD, LYNDEN WA	$	250
DREAMTECH, S 336TH ST., FEDERAL WAY WA	$	250
EXTREME ELECTRICAL LLC, 62ND ST. SE, SNOHOMISH WA	$	250
GSB ELECTRIC, INC., 80TH AVE NW, STANWOOD WA	$	250
NORTH CASCADES HEATING & A/C INC., PO BOX, ENTIAT WA	$	250
PERCIVAL SCIENTIFIC, RESEARCH DRIVE, PERRY IA	$	250
POS SOLUTIONS INC., TAYLOR DRIVE, EVERETT WA	$	500
PUGET HOMES CORPORATION, 136TH AVE NE, KIRKLAND WA	$	250
RASBAND HOMES & ASSOCIATES INC, MARKET, LAKE STEVENS WA	$	250
SAMMY ELECTRONIC, WISH AVENUE, ENCINO CA	$	1,500
SHELTON ELECTRIC, PO BOX, SHELTON WA	$	250
SMITH & LOVELESS, INC., SANTA FE TRAIL DRIVE, LENEXA KS	$	250
SUPERIOR SERVICE ELECTRIC, LLC, 80TH DR NE, MARYSVILLE WA	$	250
WASHINGTON ENERGY SERVICES CO., THORNDYKE AVE. W., SEATTLE WA	$	250

Region 2 – King County

A H A SERVER & NETWORK CONSULTING, SMOKEY PT BLVD., ARLINGTON WA	$	500
A J ENTERPRISES, ELIZABETH LANE, SEQUIM WA	$	1,750
A W SCHELL ELECTRIC SRVCS INC, PO BOX, TACOMA WA	$	250
BD COMMUNICATIONS, WELCH PLACE, MANSFIELD TX	$	3,500
DAVIS ELECTRIC INC., 3RD PL. S.W., SEATTLE WA	$	250
DICK HOWARD & SONS ELECT. INC., PO BOX, LYNNWOOD WA	$	250
DREAMTECH, S 336TH ST, FEDERAL WAY WA	$	250
EXTREME SECURITY, STATE ROUTE 92, LAKE STEVENS WA	$	6,000
FURNITURE FACTORY DIRECT, S. 72ND STREET, TACOMA WA	$	250
OPTIC FUSION INC, PO BOX, TACOMA WA	$	500
RELIANT ELECTRIC, PO BOX, KIRKLAND WA	$	250
SAMMY ELECTRONIC, WISH AVENUE, ENCINO CA	$	2,500
TRITON ELECTRIC INC., 63RD AVE. W, MOUNTLAKE TERRANCE WA	$	500
YOUNG ELECTRIC SIGN CO, E 41ST ST, GARDEN CITY ID	$	1,000

Region 3 – Pierce & Kitsap County & Olympic Peninsula

ABACUS ELECTRIC LLC, SALES RD. S., LAKEWOOD WA	$	250
BD COMMUNICATIONS, WELCH PLACE, MANSFIELD TX	$	2,500
CHIN'S ELECTRIC INC., 13TH PLACE S.W., FEDERAL WAY WA	$	250
CREATIVE HEATING INC, 29TH AVE E, TACOMA WA	$	250
SAMMY ELECTRONIC, WISH AVENUE, ENCINO CA	$	1,750

Region 4 – Southwest Washington

A H A SERVER & NETWORK CONSULTING, SMOKEY PT BLVD., ARLINGTON WA	$	500
ADVANCED HEATING & AIR CONDITIONING INC., SE FOSTER RD., PORTLAND OR	$	250
AMTECH LIGHTING SERVICES, E ORANGEWOOD AVE, ANAHEIM CA	$	500
BD COMMUNICATIONS, WELCH PLACE, MANSFIELD TX	$	750
COMP VIEW INC, INTERBURBAN AVE S., SEATTLE WA	$	250
COOK SECURITY GROUP INC, SE INTERNATIONAL WAY, MILWAUKIE OR	$	250
E C COMPANY, PO BOX, PORTLAND OR	$	500
N W SOUND & SECURITY TECH LLC, N.E. MARX, PORTLAND OR	$	250
SAMMY ELECTRONIC, WISH AVENUE, ENCINO CA	$	250
WHITE LIGHTNING ELECTRIC INC, S.E. 52ND AVE., PORTLAND OR	$	250
WIRE RITE ELECTRIC INC., PO BOX, BATTLE GROUND WA	$	250
WYTEK CONTROLS INC, PO BOX, TUALATIN OR	$	250
YOUNG ELECTRIC SIGN CO, E. 41ST ST., GARDEN CITY ID	$	500

Region 5 – Central Washington

ALLSTAR ELECTRIC INC, W NOB HILL, YAKIMA WA	$	500
CAMERASCAN, PO BOX, NORTH BEND WA	$	500
LESCO ELECTRICAL CONTRACTING INC., 9TH ST., PROSSER WA	$	250

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POLHAMUS HEATING & A/C INC, BELL RD NE, MOSES LAKE WA	$	250
POWER PLUS ELECTRIC LLC, EASTSIDE RD, MILTON FREEWATER OR	$	500
ALLSTAR ELECTRIC INC, W NOB HILL, YAKIMA WA	$	500
CAMERASCAN, PO BOX, NORTH BEND WA	$	500
LESCO ELECTRICAL CONTRACTING INC., 9TH ST., PROSSER WA	$	250
POLHAMUS HEATING & A/C INC, BELL RD NE, MOSES LAKE WA	$	250
POWER PLUS ELECTRIC LLC, EASTSIDE RD, MILTON FREEWATER OR	$	500
Region 6 -		
APEX COMPUTER SERVICES, N MCDONALD ST, MELISSA TX	$	500
D & D HEATING A/C SHEET METAL INC, COMMERCE LOOP, POST FALLS ID	$	250
DBE DATACOM INC, EL TORO RD STE, LAKE FOREST CA	$	250
FLOENER ELECTRIC, W FIRST AVE, COLVILLE WA	$	250
INLAND METALS ELECTRIC LLC, 5TH ST, CLARKSTON ID	$	600
RIPLEY DEVOLPMENT, N DARTFORD, SPOKANE WA	$	250
RNT CONSTRUCTION LLC, EAGLE NEST CT, DAVENPORT WA	$	250
SIMPLY CUSTOM ELECTRIC, PO BOX, FAIRFIELD WA	$	250
STEVE SHERIDAN ELECTRIC, W TEAL AVE, SPOKANE WA	$	250
TOWER ELECTRICAL SERVICES INC, EAST MONTGOMERY, SPOKANE WA	$	250
Central Office		
AC/DC ELECTRIC OF IDAHO, PO BOX, CLE ELUM WA	$	100
ANDGAR CORPORATION, PO BOX, FERNDALE WA	$	250
COMPUTOR POWER & SERVICE INC., NW 50TH ST, SEATTLE WA	$	300
DEFINITIVE AUDIO INC., 130TH NE, BELLEVUE WA	$	250
FLOENER ELECTRIC, WEST FIRST AVE, COLVILLE WA	$	500
GARRETT ELECTRIC CO, WELLSIAN WAY, RICHLAND WA	$	100
HERITAGE ENTERPRISES INC., PACIFIC AVE, TACOMA WA	$	100
PACIFIC AIR CONTROL INC., NORTH CREEK PKWY N, BOTHELL WA	$	450
TRITON ELECTRICAL SERVICES LLC, PO BOX, LAKE STEVENS WA		250
Violation – Uncertified Electrician		
Region 1 – North Puget Sound		
ABERCROMBIE, DAN, SANTA FE TRAIL DRIVE, LENEXA KS	$	250
ATIENZA, JOSELITO, PEACE PORTAL DR., BLAINE WA	$	250
BAGAOISAN, FERNIE, NE 120TH ST, SEATTLE WA	$	250
BARREDO, MARIO, PEACE PORTAL DR., BLAINE WA	$	250
BECKHEYER, FRED, MEREDITH DRIVE, BAXTER MN	$	250
BENSON, MICHAEL, NE 194TH AVE, PORTLAND OR	$	250
BERGSAGEL, NATHAN, 27TH DR. S.E., EVERETT WA	$	200
BRICKMAN, COLLIN, 26TH ST NE, LAKE STEVENS WA	$	250
BRIDGMAN, SCOTT, 76TH ST. SE, SNOHOMISH WA	$	250
BULLOCK, ROBERT, N 92ND ST, SEATTLE WA	$	750
BURKS, ROY, 220TH ST SOUTH, KENT WA	$	250
CHILSON, TYSON, N. CARPENTER RD., SNOHOMISH WA	$	250
DAVIS, CHRIS, SW GENESSE ST, SEATTLE WA	$	250
ESHLEMAN, TYLER, 62ND ST. SE, SNOHOMISH WA	$	250
EVANS, GORDON, , DECATUR ISLAND WA	$	250
GONZALEZ, LEOCADIO, BRUSKRUD ROAD, EVERETT WA	$	250
HAMED, BASSIEM, WISH AVENUE, ENCINO CA	$	1,500
KELLEY, JAMES, N 92ND ST, SEATTLE WA	$	500
KHONGSAVANH, KHAMTA, PO BOX, INDEX WA	$	250
KOT, OLEG, 50TH AVE. W., LYNNWOOD WA	$	250
KUSHLER, CLIFFORD, 36TH PL W, LYNNWOOD WA	$	250
MENZIES, ALEC, WHITE CHUCK PL, GRANITE FALLS WA	$	250
MOLNAR, TREVOR, 10TH PL WEST, LYNWOOD WA	$	250
MORTENSEN, TODD, 240TH ST SE, BOTHELL WA	$	250
MURPHY, JOHN, 199TH PL NE, WOODINVILLE WA	$	250
PENDRY, DALE, MEGAN LANE, BELLINGHAM WA	$	250
RUTHRUFF, CURTIS, 49TH AVE W, MUKILTEO WA	$	250
STEVENS, VERNON, SNEEOOSH RD, LA CONNER WA	$	250
VELLEK, TIM, WHITE CHUCK PL, GRANITE FALLS WA	$	250
WALKER, JAMES, 19TH AVE NE, ARLINGTON WA	$	250
WALKER, RONALD, WARFIELD ST., PERRY IA	$	250
WELLER, JERRY, SMOKEY PT. BLVD, ARLINGTON WA	$	250
WHITNER, BARRIE, VIRGINIA AVE, EVERETT WA	$	250
WILSON, DAVID, TAYLOR DR., EVERETT WA	$	500
ZERFOSS, DEE, LEXINGTON AVE., EVERETT WA	$	250
Region 2 – King County		

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ATKINSON, SHAWN, S 2920 W, WEST JORDAN UT	$	250
BENNETT, CHRISTOPHER, N M ST, TACOMA WA	$	250
BOHAG, WILFORD, NE 88TH ST, SEATTLE WA	$	500
BULLOCK, ROBERT, N 92ND ST, SEATTLE WA	$	1,750
BURKETT JR., CECIL, PO BOX, LAKE STEVENS WA	$	250
CHAMBLISS, ALAN, 14TH PL. SW, FEDERAL WAY WA	$	500
COX, WILLIAM, S JACKSON ST, PERRYVILLE KY	$	250
CROWE, ANTHONY, GIBSON RD, PERRYVILLE KY	$	250
GEHRET, MATTHEW, UNION AVE. S.E., RENTON WA	$	250
GETTLE, LANCE, SE 278TH STREET, MAPLE VALLEY WA	$	250
GLAZIER, SCOTT, W 6600 S, WEST JORDAN UT	$	250
GOODWIN, ALEX, C ST, STEILACOOM WA	$	250
HAMED, BASSIEM, WISH AVENUE, ENCINO CA	$	1,250
KELLEY, JAMES, N 92ND ST, SEATTLE WA	$	1,750
KUSH, DAVID, AVENDALE WAY, REDMOND WA	$	250
O'HARA, JAMES, 29TH AVE W, BRIER WA	$	100
ROBBINS, BRANDON, FORKLAND RD, PARKSVILLE KY	$	250
SMITH, SEAN, LENORA PL. N, SEATTLE WA	$	250
STOLZE, JASON, 126TH AVE E, PUYALLUP WA	$	250
WALLACE, CRAIG, 151ST AVE. S.E., RENTON WA	$	250
WELLER, JERRY, SMOKEY PT. BLVD, ARLINGTON WA	$	500
ATKINSON, SHAWN, S 2920 W, WEST JORDAN UT	$	250
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
BECKHEYER, FRED, MEREDITH DRIVE, BAXTER MN	$	250
BULLOCK, ROBERT, N 92ND ST, SEATTLE WA	$	500
FOX'S REMODELING & ROOFING, ORCAS, PORT ANGELES WA	$	250
GRUBER, LELAND, N. E. COUCH ST., GRESHAM OR	$	250
HAMED, BASSIEM, WISH AVENUE, ENCINO CA	$	1,750
JENS, WILLIAM, 247TH AVE. N.E., REDMOND WA	$	250
KELLEY, JAMES, N 92ND ST, SEATTLE WA	$	750
LOUCKS, SCOTT, 18TH AVE. S., TACOMA WA	$	250
ROBERTS, JOHN, KIOWA TRAIL, FOX ISLAND WA	$	125
SCHRADER, DAVID, 184TH STREET EAST, TACOMA WA	$	250
SEAVIEW CONSTRUCTION, PO BOX, CARLSBORG WA	$	250
SHAFFER, RICK, N.W. RHOTON CT., YELM WA	$	250
SON, VAN, PO BOX, TACOMA WA	$	250
SPICER, ROBERT, 113TH ST E., BONNEY LAKE WA	$	250
STANTON, JESSE, 132ND ST KPN, GIG HARBOR WA	$	250
WELLS, DAN, 219TH ST., GRAHAM WA	$	250
Region 4 – Southwest Washington		
BRYANT, TOM, S M, TACOMA WA	$	250
BULLOCK, ROBERT, N 92ND ST, SEATTLE WA	$	500
CLARK, MICHAEL, NE 136TH AVE, VANCOUVER WA	$	250
ESTILL, JEFFREY, S.E. HENDERSON ST., PORTLAND OR	$	250
GENCO JR., RALPH, ,	$	250
GRIMSHAW, GREGORY, SE DEER MEADOW LOOP, DAMACUS OR	$	250
GUSKOV, MIKHIAL, 70TH AVENUE W, UNIVERSITY PLACE WA	$	250
HAMED, BASSIEM, WISH AVENUE, ENCINO CA	$	250
HODSON, MICHAEL, S.E. BOARDMAN CT, MILWAUKIE OR	$	250
JAMES, JERRY, N.W. BLAIR ST., SHERIDAN OR	$	250
KELLEY, JAMES, N 92ND ST, SEATTLE WA	$	250
KIRKPATRICK, DANNY, HILL STREET NE, OLYMPIA WA	$	250
LEON, ROBERT, N 31ST, TACOMA WA	$	250
MEADOWS, DARIN, S.E. 47TH AVE, PORTLAND WA	$	250
MOHAMMED, PHILLIP, 70TH AVENUE W, UNIVERSITY PLACE WA	$	250
SEROCK, EDWARD, 93RD AV NW, GIG HARBOR WA	$	250
SHELL, DEAN, W. 38TH STREET, VANCOUVER WA	$	250
TANKERSLEY, DAVID, SW 156TH AVE., BEAVERTON OR	$	250
WELLER, JERRY, SMOKEY PT. BLVD, ARLINGTON WA	$	500
Region 5 – Central Washington		
BELL, MATT, S WASHINGTON, DOWNEY ID	$	750
DAUGHS, SCOTT, BUTTERFIELD RD, YAKIMA WA	$	250
GROVER, BART, PO BOX, BLACKFOOT ID	$	500
GUEVARA, ELEAZAR, PO BOX, PASCO WA	$	250
MILLER, MICHAEL, DEL MAR CT., RICHLAND WA	$	250
SOWELL, MAURICE, W FREMONT ST, POCATELLO ID	$	500

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WALKER, KENNY, S.E. 43PL, FALLS CITY WA	$	250
YUNDT, CRAIG, EMPIRE DR., LA GRANDE OR	$	250
Region 6 – Eastern Washington		
BENNETT, STEVEN, N ALTAMONT, SPOKANE WA	$	250
BOARDMAN, BRANDON, 13TH, LEWISTON ID	$	250
BYRNE, BRIAN, W. GORDON AVE, SPOKANE WA	$	250
COWARD, ZACH, N MCDONALD ST, MELISSA TX	$	250
FRANCK, DONALD, S HOFSTETTER, COLVILLE WA	$	250
GLEAVE, LARRY, N DARTFORD, SPOKANE WA	$	250
HEIKKILA, RON, EAGLE NEST CT, DAVENPORT WA	$	250
HUDDLESTON, BRIAN, N MCDONALD ST, MELISSA TX	$	250
KNIGHT, WILLIAM, W. GRACE AVE, SPOKANE WA	$	250
LALISAM, JEREMIAH, SHAMROCK, SAN PABLO CA	$	250
MCKENNA, DAN, N PITTSBURG, SPOKANE WA	$	500
RAMSEY, RICK, REED ST, AMERICAN FALLS ID	$	1,250
ROHDE, STEVE, COPENHAVEN RD N, CRESTON WA	$	250
WANES WORLD ENTERPRISES, S ASSEMBLY RD, SPOKANE WA	$	250
Central Office		
ADAMS, MICHAEL, FOREST PK DR NE, SEATTLE WA	$	1,500
DANIELS, GERALD, 172ND AVE. SE, AUBURN WA	$	250
EHRLICH, STEPHEN, NE 103RD PLACE, PORTLAND OR	$	500
FRANCK, DONALD, S HOFSTETLER, COLVILLE WA	$	500
GARNER, LUCAS, PLEASANT AVE, BREMERTON WA	$	250
JEWELL, ROSS, ALBRIGHT AVE SE, PORT ORCHARD WA	$	250
KAIKALA, JOSH, HARTFORD DRIVE, LAKE STEVENS WA	$	250
MAST, JOSEPH, NE WRIMBREL CT, POULSBO WA	$	1,000
MATHEWS, JOSH, 148TH ST E, TACOMA WA	$	250
PALLARES JR., GILDARDO, PARKLYN WAY, FERNDALE WA	$	250
SALYARDS, JOHN, POPLAR ST, EVERETT WA	$	750
SAVAGE, CRAIG, SANT ANA AVE, COSTA MESA CA	$	100
TOWNE, CHRISTOPHER, WILLOW WAY, PASCO WA	$	250
WRIGHT, GLENN, WRIGHT STREET, RATHDRUM ID	$	250
ZIMBEHL, MARK, W 13TH AVE, KENNEWICK WA	$	750
Violation – No Electrical Work Permit		
Region 1 – North Puget Sound		
A & E ELECTRIC, E HOLLY ST, BELLINGHAM WA	$	250
A H A SERVER & NETWORK CONSULTING, SMOKEY PT BLVD., ARLINGTON WA	$	250
A NEW TOMORROW'S ELECTRIC, INC, 88TH DR NE, ARLINGTON WA	$	250
ADT SECURITY SERVICES, NORTHCREEK PKWY N, BOTHELL WA	$	4,000
AMSBERRY, JEFF, PO BOX, MONROE WA	$	250
ANCO INC, BOTHELL-EVERETT HWY, BOTHELL WA	$	250
AXIS ELECTRIC INC, NEW MARKET ST, SEATTLE WA	$	250
BAGAOISAN, FERNIE, NE 120TH ST, SEATTLE WA	$	250
BANNER ELECTRIC INC, E FIR ST, MOUNT VERNON WA	$	250
BD COMMUNICATIONS, WELCH PLACE, MANSFIELD TX	$	1,250
BECKHEYER, FRED, MEREDITH DRIVE, BAXTER MN	$	250
BERGSAGEL CONSTRUCTION INC., 27TH DR. S.E., EVERETT WA	$	200
BOLD, JIM, 85TH AVE. SE, WOODINVILLE WA	$	250
CAMPBELL, CASEY, PUGET LANE, EDMONDS WA	$	250
CREATIVE HEATING INC., 29TH AVE E., TACOMA WA	$	250
D J MECHANICAL INC., 119TH AVE NE, LAKE STEVENS WA	$	250
DARITECH INC., BENSON ROAD, LYNDEN WA	$	250
DELMEDICO, NICK, 53RD AVE SE, BOTHELL WA	$	250
DENNIS WEBB ELECTRIC INC., 220TH SW, BOTHELL WA	$	250
DREAMTECH, S 336TH ST., FEDERAL WAY WA	$	250
ETHAN ELECTRIC, AVENUE B, SNOHOMISH WA	$	500
EVERGREEN POWER SYSTEMS, 1ST AVE S, SEATTLE WA	$	250
EXTREME ELECTRICAL LLC, 62ND ST. SE, SNOHOMISH WA	$	250
FEDOREAN, NICOLAI, CHERRY ST., EDMONDS WA	$	250
GORSHKOFF, P.K., 214 TH PL. S.E., SNOHOMISH WA	$	250
GREEN, ERIC, CASTLEROCK DR, BLAINE WA	$	250
HARDISTY, CHRIS, 208TH PL. S.W., LYNNWOOD WA	$	250
I & S DIRT WORKS, WHITE CHUCK PL, GRANITE FALLS WA	$	250
ISSAQUAH ELECTRIC INC, QUAIL CREEK WAY SE, REDMOND WA	$	250
JMH ELECTRIC LLC, 196TH STREET, BOTHELL WA	$	125

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JUMANCA, ANTANIE, 233RD PL SE, BOTHELL WA	$	250
L&L ELECTRIC, CHENNAULT BEACH ROAD, MUKILTEO WA	$	2,000
LIGHTNING ELECTRIC INC, E SMITH RD, BELLINGHAM WA	$	1,000
LINDSAY STOVE WORKS INC., PO BOX, STANWOOD WA	$	250
LINESIDE ELECTRIC INC, 132ND ST SE, MONROE WA	$	250
LYMAN, JOHN, 181ST AVE NE, SNOHOMISH WA	$	250
METALSMITHS INC, 22OTH ST SW, MOUNTLAKE TERRACE WA	$	1,000
MONTON/TOBY ELECTRIC LLC, SE ARCADIA SHORES, SHELTON WA	$	1,000
MONTON-HOLBROOKS ELECTRIC, LLC, SE ARCADIA SHORES ROAD, SHELTON WA	$	250
NORTH CASCADES HEATING & A/C INC., PO BOX, ENTIAT WA	$	250
PERCIVAL SCIENTIFIC, RESEARCH DRIVE, PERRY IA	$	250
PIONEER DOOR INC, 196TH ST SE, LYNNWOOD WA	$	250
POS SOLUTIONS INC., TAYLOR DRIVE, EVERETT WA	$	500
POWER HOUSE ELECTRIC, 420TH AVE. SE, NORTH BEND WA	$	250
PUGET HOMES CORPORATION, 136TH AVE NE, KIRKLAND WA	$	250
PUGET SOUND ELECTRICAL SERVICE, 4TH AVE S., SEATTLE WA	$	250
RASBAND HOMES & ASSOCIATES INC, MARKET PL, LAKE STEVENS WA	$	250
RAY'S PLUMBING AND HEATING, PO BOX, REDMOND WA	$	250
REMLINGER, DAVID, OLD SNOHOMISH - MONROE ROAD, SNOHOMISH WA	$	250
RODERICK, KEVIN, 96TH DR. SE, SNOHOMISH WA	$	250
ROTEN, SHAWN, LOVELAND AVE, MUKILTEO WA	$	1,000
SAMMY ELECTRONIC, WISH AVENUE, ENCINO CA	$	1,500
SHORELINE ELECTRIC INC., 89TH PL W, EDMONDS WA	$	1,000
SHORELINE ELECTRIC, INC, FIRDALE AVE, EDMONDS WA	$	250
SMITH & LOVELESS, INC., SANTA FE TRAIL DRIVE, LENEXA KS	$	250
SMITH MECHANICAL, PORTAL WAY, FERNDALE WA	$	250
SMITH, ALEX, 115TH AVE. SE., SNOHOMISH WA	$	250
SOUND HEATING & A/C INC., 184TH ST. E., PUYALLUP WA	$	1,000
ST. JOHN, TOM, NOOTKA RD., WOODWAY WA	$	250
TEAM MECHANICAL, PO BOX, MONROE WA	$	250
THE ROCK CHURCH, 146TH ST SE, MONROE WA	$	250
WALTERS, PATRICK, WILLOW DR, SULTAN WA	$	250
WASHINGTON ENERGY SERVICES CO., THORNDYKE AVE. W., SEATTLE WA	$	1,000
WEBB, JEFF, 124TH PL SE, EVERETT WA	$	250
WEST COAST ELECTRICAL, PO BOX, SEATTLE WA	$	250
WESTERN NEON, INC, 1ST AVE SOUTH, SEATTLE WA	$	250
WONG, BILL, 139TH AVE. SE., NEWCASTLE WA	$	250
ZERFOSS, DEE, LEXINGTON AVE., EVERETT WA	$	250
Region 2 – King County		
A H A SERVER & NETWORK CONSULTING, SMOKEY PT BLVD., ARLINGTON WA	$	500
BD COMMUNICATIONS, WELCH PLACE, MANSFIELD TX	$	3,500
CHAMBLISS, ALAN, 14TH PL. SW, FEDERAL WAY WA	$	500
DANAO, FERDINAND, 104TH PL SE, RENTON WA	$	250
DREAMTECH, S 336TH ST, FEDERAL WAY WA	$	250
ELECTRIC COMPANY INC, N 80TH ST, SEATTLE WA	$	250
EXTREME SECURITY, STATE ROUTE 92, LAKE STEVENS WA	$	3,000
FRANK COLUCCIO CONST CO, M L KING JR WAY S, SEATTLE WA	$	200
FURNITURE FACTORY DIRECT, S. 72ND STREET, TACOMA WA	$	250
KRISCO CORPORATION, PO BOX, WOODINVILLE WA	$	250
OPTIC FUSION INC, PO BOX, TACOMA WA	$	250
SAMMY ELECTRONIC, WISH AVENUE, ENCINO CA	$	2,500
TRITON ELECTRICAL SERVICES LLC, PO BOX, SNOHOMISH WA	$	250
VALLEY ELEC CO OF MT. VERNON INC, MERRILL CREEK PARKWAY, EVERETT WA	$	1,000
WESTERN TELCOM LLC, 38TH AVE S, AUBURN WA	$	1,000
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
A & C ELECTRIC, 281ST AVE. SE, ENUMCLAW WA	$	1,000
A + ELECTRIC SERVICES, PACIFIC AVE SE, LACEY WA	$	2,000
ABOVE THE BOARD CONSTRUCTION, 184TH STREET EAST, TACOMA WA	$	250
ABSOLUTE AIR INC, E. HWY 01, PT ANGELES WA	$	250
ASHBAUGH, MARK, 109TH ST. S., TACOMA WA	$	500
BD COMMUNICATIONS, WELCH PLACE, MANSFIELD TX	$	1,250
BECKHEYER, FRED, MEREDITH DRIVE, BAXTER MN	$	250
BRINKS HOME SECURITY INC, WEST VALLEY HWY (H106), KENT WA	$	2,000

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DIEBOLD INCORPORATED, PO BOX, NORTH CANTON OH	$	1,000
ENGLAND, MIKE, 36 ST SE, AUBURN WA	$	250
GANDY, WILLIAM, E. 61ST ST., TACOMA WA	$	250
GARMIRE, ROBERT, GLENHAVEN RD., ANDERSON ISLAND WA	$	250
GROFF'S ELECTRIC HEAT INC., S. UNION AVE., TACOMA WA	$	1,000
HAROLD LEMAY ENTERPRISES INC, PO BOX, TACOMA WA	$	250
JENS, WILLIAM, 247TH AVE. N.E., REDMOND WA	$	250
LOGAN ELECTRIC LLC, S. D ST., TACOMA WA	$	250
MOORE, JAMES, PO BOX, KEYPORT WA	$	250
PENINSULA POLE SERVICE INC, PO BOX, BURLEY WA	$	250
POWER DESIGNS INC., 66TH AVE CT E, GRAHAM WA	$	2,000
RTC CONSTRUCTION, WOODHILL DR NW, GIG HARBOR WA	$	250
SAMMY ELECTRONIC, WISH AVENUE, ENCINO CA	$	1,750
STORMENT ELECTRIC, SPRINGFIELD DR. N.W., GIG HARBOR WA	$	250
VECA ELECTRIC CO INC, 7TH AVE S, SEATTLE WA	$	2,000
Region 4 – Southwest Washington		
A & E SECURITY AND ELECTRONIC SOLUTIONS, NORTH HIGHWAY 99W, MCMINNVILLE OR	$	250
A D K ELECTRIC INC., PO BOX, BATTLE GROUND WA	$	250
A H A SERVER & NETWORK CONSULTING, SMOKEY PT BLVD., ARLINGTON WA	$	500
ADAMS, BRAD, SOUTH BANK ROAD, ELMA WA	$	250
ADT SECURITY SERVICES INC, NORTHCREEK PARKWAY N., BOTHELL WA	$	2,000
ADVANCED HEATING & AIR CONDITIONING INC., SE FOSTER RD., PORTLAND OR	$	250
AIR-AMERICA INC, PO BOX, BRUSH PRAIRIE WA	$	250
ALZOLA, MERRIE, MCDONDALD RD, WASHOUGAL WA	$	250
AMTECH LIGHTING SERVICES, E ORANGEWOOD AVE, ANAHEIM CA	$	1,000
ANGUIANO, TABITHA, PO BOX, AMBOY WA	$	250
B&B AIR CONDITIONING/HTG INC, PO BOX, LONGVIEW WA	$	250
BD COMMUNICATIONS, WELCH PLACE, MANSFIELD TX	$	750
BUNDY, NICHOLAS, SUMMIT PLACE DRIVE, MCCLEARY WA	$	250
CHRISTENSON ELECTRIC INC, NW THURMAN ST, PORTLAND OR	$	250
COKL, ERICK, CAVALIER LOOP SW, OLYMPIA WA	$	250
COOK SECURITY GROUP INC, SE INTERNATIONAL WAY, MILWAUKIE OR	$	250
CORNERSTONE BUILDERS INC., SW 156TH AVE, BEAVERTON OR	$	250
HADFIELD, MICHAEL, NW 13TH CT., VANCOUVER WA	$	250
HALES, KEVIN, N.E. 159TH AVE., VANCOUVER WA	$	250
HALL & SON PUMP CO INC, NE CAPLES RD, BRUSH PRAIRIE WA	$	250
HEATER, JOHN, , OLYMPIA WA	$	250
JUMP, ROBBY, RYAN LANE, ELMA WA	$	250
K & C HOME TEK CONST INC, SE 39TH ST, VANCOUVER WA	$	250
LAKESIDE ELECTRIC INC, PO BOX, VANCOUVER WA	$	250
LEON, ROBERT, N 31ST, TACOMA WA	$	500
OSGOOD, MYRON, MONTE-ELMA ROAD, ELMA WA	$	250
PETLINSKY, MADEZHDA, NE 103 CIRCLE, VANCOUVER WA	$	250
QUICK, KEVIN, S.W. CINDY ST., BEAVERTON OR	$	250
SAMMY ELECTRONIC, WISH AVENUE, ENCINO CA	$	250
STELLAR INSTALL, NW 16TH AVE, BATTLE GROUND WA	$	250
SYMMETRY CONSTRUCTION SERVICES CORP, N. W. CORNELL RD, HILLSBORO OR	$	250
THOMPSON, DANIEL, SW 12 AVE, BATTLE GROUND WA	$	250
THOR ELECTRICAL INC, NE 116 ST, VANCOUVER WA	$	250
WHITE LIGHTNING ELECTRIC, S.E. 52ND AVE., PORTLAND OR	$	1,500
Region 5 – Central Washington		
ALLSTAR ELECTRIC INC, W NOB HILL, YAKIMA WA	$	2,000
CAMERASCAN, PO BOX, NORTH BEND WA	$	1,000
CHIM CHIMNEY FIREPLACE & SPA, N WENATCHEE AVE, WENATCHEE WA	$	750
E C S NORTHWEST LLC, W SAGEMOOR, PASCO WA	$	250
LESCO ELECTRICAL, 9TH ST, PROSSER WA	$	250
MATTHEWS ELECTRIC LLC, PO BOX, PASCO WA	$	250
MILLER & SONS HEATING LLC, BAILEY RD, ZILLAH WA	$	250
SECURETECH NORTH INC, NAISMITH BLVD, EUGENE OR	$	1,000
SIERRA ELECTRIC INC., PO BOX, PASCO WA	$	250
STANLEY ELECTRIC LLC, PO BOX, KENNEWICK WA	$	250
STEREO FIRST BY BEMIS, S 1ST ST, YAKIMA WA	$	250

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TOLMAN ELECTRIC, LINDERMAN RD, MABTON WA	$	1,000
VALLEY SHEET METAL, N RAILROAD AVE., ELLENSBURG WA	$	2,000
WILSON, LIONEL, , PATEROS WA	$	250
Region 6 – Eastern Washington		
APEX COMPUTER SERVICES, N MCDONALD ST, MELISSA TX	$	250
DBE DATACOM INC, EL TORO RD, LAKE FOREST CA	$	250
GREG'S ELECTRICAL LLC, PO BOX, COLFAX WA	$	1,000
HALL, RODNEY, S SHELLEY LAKE RD, SPOKANE VALLEY WA	$	250
MAC INDUSTRIES INC, AQUA CIRCLE, COEUR D' ALENE ID	$	250
MCKENNA, DAN, 12411 PITTSBURG, SPOKANE WA	$	250
PRECISE RESIDENTIAL ELECTRIC INC., N CRAIG RD., NINE MILE FALLS WA	$	250
RAIN DANCE PROPERTY MAINTENANCE INC, N GOVERMENT WAY, HAYDEN LAKE ID	$	250
RIPLEY DEVOLPMENT, N DARTFORD, SPOKANE WA	$	250
RNT CONSTRUCTION LLC, EAGLE NEST CT, DAVENPORT WA	$	250
ROHDE, STEVE, COPENHAVEN RD N, CRESTON WA	$	250
SANDERS, KEITH, W MEADOWVIEW LN, NINE MILE FALLS WA	$	200
Central Office		250
ISLAND CONNECTIONS, LLC, A STREET, EASTSOUND WA	$	500

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 10** **October 2006**

Remaining Stakeholders Meetings

Ten electrical stakeholder meetings remain in the months of October and November. Stakeholder meetings are a great opportunity to interact with Inspectors, Supervisors and Central Office staff. An open forum will be included for stakeholders to give comments, concerns and opinions on the current and future direction of the program. For the remaining locations and times visit the website at: http://www.lni.wa.gov/tradeslicensing/electrical/whatsnew/calendar

No Inspections In L&I Jurisdictions Tuesday, November 14th

The Electrical Program will be holding a statewide training for inspection staff on November 14th. The training will focus on consistency and emerging new technologies. Areas served by Labor and Industries, including the cities of Auburn and Shoreline, will not have any inspections performed on this date. Areas further away from Tumwater likely will have additional down time while the inspectors travel to and return from the training. Due to space limitations this training will not be open to stakeholders.

Electrical Correction Initiative

Correction writer, an addition to the mobile inspection software program, has been collecting important inspection correction data for the last three months. The data collected will help in identifying two groups of electrical contractors that will be involved in a project called the Correction Initiative. The top 5% of contractors in each group will be included in the project.

The first group of Contractors identified received the highest amount of corrections per inspection during the two month period. Contractors receiving an unusually high average amount of corrections require a disproportionate use of inspection staff time. The second group of contractors identified received the most corrections total during the two month period. Typically these contractors deal in high volume and the quality of their installations have a significant impact on department resources.

Contractors in both groups received initial contact letters with additional correspondence to follow. We will work closely with these contractors to achieve the goal of a 15% reduction by July 1, 2007.

Bonding Of Natural Gas Piping Systems

Safety concerns have been expressed that building officials may be misinterpreting a notice sent out by a gas utility provider concerning electrical bonding to natural gas facilities. The intent of the notice was to eliminate the use of underground gas lines as grounding electrodes; however the result has been the disconnection of bonding connections that significantly reduces electrical safety.

Any required bond removed from a gas line creates the potential for a serious safety hazard. NEC 250.104(B) clearly requires that gas piping, when installed in or when attached to a building or structure must be bonded to the service equipment enclosure, the grounded conductor at the service, the grounding electrode conductor where of sufficient size, or to one or more of the grounding electrodes used. The bond establishes continuity and an adequate path for any fault current likely imposed. A gas piping system that is not properly bonded to the electrical system can present serious fire or shock hazard within a building if it is energized accidentally.

The Department has asked the gas utility provider to clarify its position with the building officials. Until this issue is resolved please notify the Chief Electrical Inspectors office of any building official requiring the gas or other metal piping bonding disconnected.

Temporary Permit, Licensing, And Certification Fee Reductions

The dedicated electrical fund completely supports the electrical licensing, certification, and inspection programs. The electrical program is only allowed to spend up to the maximum amount allocated by the legislature. The electrical industry in Washington is healthy and growing; the current program revenue is up; and the electrical fund is growing. If we are not allowed to spend excess revenue on improving the

services that our customers are paying for, then it is appropriate to reduce the fees and slow the growth of the fund.

The current WAC revisions to be effective December 31, 2006 will include permanent and temporary fee schedules. The proposed temporary fee schedules lower permit, licensing and certification fees by 5% and round down to the nearest dollar when possible and the nearest ten cents otherwise. The proposed reduced permit fees are projected to be effective until December 31, 2007. Licensing reductions are scheduled to remain in place for a period of renewal for each license type. We will monitor the fund and set fees as necessary. If the electrical fund balance permits it, these reduced fees may be extended or the reductions increased.

● Top 10 Corrections Written By Our Inspectors In July And August Combined

The Correction Writer software our inspectors have been using since mid-June allows us to easily view your work in useful ways. Return trips to jobsites to complete corrections and verify completion are costly to you and to the department. Contractors and assigned company administrators should make your electrical workers aware of the following top ten electrical corrections written for the months of July and August. They are ranked with 1) being the most commonly written correction.

1) **WAC-296-46B-010(5)** Electrical wiring or equipment must be sufficiently accessible at the time of inspection.
2) **NEC 110.3** Listed or labeled equipment shall be installed and used in accordance with any instructions included in the listing or labeling.
3) **WAC 296-46B-905(7)(b)** Submitter notifies the department that work is ready for inspection when it is not ready.
4) **WAC 296-46B-900(1)** Inspection address must be clearly identifiable from the street. Driving directions and or a legible map is required.
5) **NEC 300.4(A)(1)** Where subject to physical damage, conductors shall be protected.
6) **WAC 296-46B-905(7)(d)** Trip fee due to inspect corrections, repeated neglect, carelessness or improperly installed electrical work.
7) **NEC 210.52(A)** Receptacle outlets required to meet the spacing requirements in 210.52(A)(1) through (A)(3).
8) **NEC 210.8(A)** All 125 Volt, single phase, 15 and 20 amp receptacles installed in the locations specified in (1) through (8) shall have ground fault circuit interrupter protection for personnel.
9) **NEC 110.12(A)** Unused cable or raceway openings in boxes, raceways, auxiliary gutters, cabinets, cutout boxes, meter socket enclosures, equipment cases or housings shall be effectively closed to afford protection substantially equivalent to the wall of the equipment.
10) **NEC 408.4** Every circuit and circuit modification shall be legible identified as to its clear, evident and specific purpose or use. The identification shall include sufficient detail to allow each circuit to be distinguished from all others. The identification shall be included in a circuit directory that is located on the face or inside of the panel door in the case of a panelboard.

● Difference Between Impracticable And Impractical

The word “impracticable” appears no less than 10 times in the 2005 NEC. For example: “NEC 240.33 Vertical Position. Enclosures for over-current devices shall be mounted in a vertical position unless that is shown to be impracticable.” A common misinterpretation for the word is when it is substituted with the word “impractical”. “Impractical” should never be substituted.

So what is the definition of impracticable? Webster’s Dictionary says, “impracticable (im-prak-ti-ke-bel) 1. Not capable of being done or carried out. Usage: Impracticable applies to that which is not capable of being carried out or put into practice. Impractical refers to that which is not sensible or prudent. A plan may be impractical because it involves undue cost or effort and yet in may not be impracticable.”

When you encounter this term in the NEC you should equate it to “impossible.”

● How Does The New Pump Installer Law Affect 01, 02, 07, 07B, 07C, 07D, and 07E Electricians That Occasionally Work On Domestic And Irrigation System Pumps?

The pump installer law (SSB 6225) primarily allows those working exclusively in the well drilling, irrigation, and pump installation industry to combine general contractor registration and specialty electrical (03 and 03A) contractor licensing into one certificate. It allows industry workers to combine specialty electrician (03 or 03A) certification and the new (03 or 03A) specialty plumber certification into a single certificate.

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Those of you who occasionally work on these water systems and their pumps may also be affected. (This law does not cover pumps in other than drinking or irrigation water systems, within appliances, or when associated with pools, spas, etc.)

The law defines the plumbing scope of domestic and irrigation water pumping systems and now mandates **both** electrician and plumber certification if you work on both the electrical parts and piping components of these systems. If you already have 01, 02, 07, 07B, 07C, 07D, or 07E electrical certification that includes domestic and/or irrigation system pump electrical work in the scope, you may apply to receive the necessary "matching" plumber certification that you need to do the complete installation, including the water piping or pressure tanks. If you work on the plumbing components of the water systems, you will need the 03 or 03A (depending on the equipment and your experience) specialty plumber certification. If you only work on the electrical equipment and do not install (or open up) the water system components, your existing electrical certification is adequate.

If you do not "grandfather" the new specialty plumbing certification before December 31, 2006 deadline, then you must work for a registered contractor as a trainee, under the supervision of an individual that has the appropriate plumber certification, until you get qualifying hours to take the specialty plumbing test.

The law only intends the combination contractor license/registration or combination pump installer plumbing/electrical certification to be available to those working exclusively in the pump installation business. If you work on pumping systems with other than 03 or 03A electrical contractor licensing or electrician certification, then you must maintain the specialty plumbing certification (and appropriate contractor registration) separate from your electrical licensing and certification.

The ability to "grandfather" necessary certification without examination expires December 31, 2006. Details on qualifying were published in the July 2006 edition of this newsletter available at: http://listserv.wa.gov/archives/electrical.html. Applications for contractors (F500-104-000), electrician-plumbers (F500-102-000), and pumping industry trainees (F500-103-000) are available online at the **Forms & Publications** link on our homepage at: http://www.lni.wa.gov/TradesLicensing/Electrical. If you do not have Internet access available, we have a toll-free automated information line at 1-800-706-5631. If you have questions or need help, you may contact the Outreach Coordinator, Roger Chick at (message line) 360-902-5249, (cell phone) 360-292-5825, and e-mail at: mailto:Outreach@Lni.wa.gov.

● Washington Administrative Code Revisions Effective December 31, 2006

Law changes, resulting from the 2006 legislative session, required significant rule changes to implement. In addition basic housekeeping and reorganization of the rule was included to better serve cities that adopt portions of the WAC. Take the time to review the changes before the effective date of December 31, 2006. The summaries below are not all the changes but may have the most impact on the industry. To view the complete document with changes visit the website below.

http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/RuleDev

WAC 296-46B-210(25) This change allows loads for septic or water well systems that are shared by no more than two dwelling units to be supplied from either of the two dwelling units if approved by the local building official and local health department

WAC 296-46B-230(28)(4)(c) A residential patio cover, that is not over one-story and not over 12 feet in height and is used only for recreation or outdoor living purposes and not as a carport, garage, storage room, or habitable room as described in the IBC will not be considered a roof for the purposes of NEC 225.19 and NEC230.24. Overhead conductor spans must maintain a minimum of 36 inch clearance above those covers.

WAC 296-46B-250(52)(3) This section creates three inspection possibilities for a concrete encased electrode.

1) At the time of inspection of other work on the project, providing the concrete-encased electrode is accessible for visual inspection.
2) At the time of the service inspection providing the installer has provided a method so the inspector can verify the continuity of the electrode conductor along its entire length. This can be accomplished by attaching a length of copper wire to one end of the electrode that reaches the location of the grounding electrode conductor that will enable the inspector to measure the resistance of the required 20 feet of rebar with a standard resistance tester.
3) Other methods when prior approval, on a jobsite basis, is given by the inspector.

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WAC 296-46B-250(56) For services only, when multiple buildings or structures are located adjacent, but structurally separate from each other, any installed rod, pipe or plate electrodes used for those services must be installed so that each building's or structure's electrodes are not less than 6 feet apart from the adjacent building's or structure's electrodes.

WAC 296-46B-700 (27) The requirements for selective coordination described in NEC 700.27 are not required where the emergency system was installed prior to June 1, 2006. For new emergency systems that are supplied from an existing emergency system installed prior to June 1, 2006, the new portion of the emergency system must comply with NEC 700.27. The ground fault sensing function of overcurrent protective devices will only be required to selectively coordinate with the ground fault sensing functions of other overcurrent protective devices.

WAC 296-46B-701 (18) The requirements for selective coordination described in NEC 701.18 are not required where the emergency system was installed prior to June 1, 2006. For new emergency systems that are supplied from an existing emergency system installed prior to June 1, 2006, the new portion of the emergency system must comply with NEC 701.18. The ground fault sensing function of overcurrent protective devices will only be required to selectively coordinate with the ground fault sensing functions of other overcurrent protective devices.

WAC 296-46B-800 Changes in this section require the telecommunications provider to identify the demarcation point. Definitions and different methods of determining the demarcation point is included.

WAC 296-46B-900 (8)(b) This revision clarifies that unless specifically noted Class A basic electrical work does not include the replacement of an equipment unit, assembly, or enclosure that contains an exempted component or combination of components (e.g., an electrical furnace/heat pump, industrial milling machine, etc.) or any appliance/equipment described as work allowed with a class B permit.

WAC 296-46B-905, 906, 910 and 911 A new temporary fee reduction schedule valid from January 1, 2007 until December 31, 2007. The fee reduction is 5% and includes permitting, licensing and certification.

WAC 296-46B-920 (e) The scope of the (06) Limited Energy Systems specialty electrician has been expanded minimally to allow the disconnection and reconnection of line voltage like in kind replacement components inside the low voltage control cabinet. It also allows the repair of replacement of line voltage connections terminated inside the cabinet to power supplies internal to the low voltage equipment provided there are no modifications to the characteristics of the branch circuit/feeder load being supplied to the circuit. The line voltage circuit is limited to 120 volts 20 amps maximum and must have a means of disconnect.

WAC 296-46B-935 (10) and 940 (13) Revisions in these two sections allow continuing education for (03) Pump and Irrigation and (03A) Domestic pump specialties to comprise of 50% electrical and 50% plumbing. These revisions were required from SSB 6225.

WAC 296-46B-940 (20) Changes in this section allows the use of shipyard or shipboard military experience to count for not more than 50% of the minimum required work experience for qualifying for an electrical examination.

WAC 296-46B-965 Changes in this section require trainees to have 8 hours of classroom education per year to re-new a training certificate. Continuing education classes will not count as required classroom education for trainees. The change is a result of legislation passed, SHB 1841.

● Electrical Question of the Month

This Month's Question: A solar photovoltaic system is being added to an existing single phase, 200 amp, single family dwelling service to help supplement the dwelling's energy consumption. The electrician decides to connect the feeders from the DC-AC inverter to the load side of the panel's service disconnecting means through a dedicated two-pole circuit breaker. What is the maximum standard size (amps) circuit breaker that can be installed for this 14kW system? **A)** 40 amps, **B)** 50 amps, **C)** 60 amps, **D)** 70 amps.

Last Month's Question: No overcurrent device shall be connected in series with any conductor that is intentionally grounded, unless: **A)** The overcurrent device is part of a selectively coordinated distribution system. **B)** Where the grounded conductor is part of an electrical service, and is attached to a made electrode. **C)** The overcurrent device opens all conductors of the circuit, including the grounded conductor, and is designed so that no pole can operate independently. **D)** None of the above. This is never allowed. **The answer is: C) [NEC 240.22(1)]**.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 9** **September 2006**

Annual Electrical Stakeholder Meetings Are Scheduled

The electrical stakeholders meetings provide an opportunity to interact with inspectors, supervisors, and central office staff. The agenda for the meeting will include: a fraud prevention presentation, Department of Occupational Safety and Health (DOSH-formerly WISHA) presentation on workplace safety, and an update on the Electrical Program activities from regional and central office staff. The meeting will also include time for you to ask questions of the presenters. Meetings will be held from **6:00 PM - 9:00 PM** at the following locations:

SEPTEMBER

14th, Tumwater, L&I office, 7273 Linderson Way, Auditorium

20th, Tukwila, L&I office, 12806 Gateway Dr

27th, White Salmon, Community Library Room , #5 Town & Country Square

OCTOBER

5th, Longview, Cowlitz PUD, 961 12th Ave.

10th, Everett, Snohomish PUD, 2320 California St.

11th, Mount Vernon, Cotton Tree Convention Center, 2300 Market St.

18th, Spokane, Spokane Falls Community College, Student Union Building, 3410 W. Fort George Dr.

19th, Pullman, Pullman City Hall, 325 SE Paradise

25th, Kennewick, Benton County PUD, 2721 West 10th

26th, Yakima, Pacific Power, 500 North Keys Road

NOVEMBER

1st, Moses Lake, L&I office, 3001 West Broadway

8th, Lakewood, Lakewood Library, 6300 Wildaire Rd SW

15th, Bremerton, Oyster Bay Conference Room, 100 Oyster Bay Ave.

WAC Public Hearings

A public hearing will be held at the L&I building, 7273 Linderson Way SW, in Tumwater at 10:00 AM on October 12, 2006, to take public testimony for proposed electrical Washington Administrative Code (Chapter 296-46B) changes scheduled to be effective December 31, 2006. Some of the revisions include incorporating:

- New laws pertaining to the domestic well industry,
- Classroom education requirements for trainees,
- Relocation of several WAC sections to allow for easier adoption by city jurisdictions,
- Fee decrease for permits and licensing, and
- Other technical and administrative changes.

Domestic Well Outreach

SSB 6225, passed in the 2006 legislative session, provides companies and workers in the pump and well industry with simplified licensing processes and opportunities to grandfather experience towards worker and administrator certification. The legislation also significantly changes the licensing requirements for performing the plumbing work necessary in specific domestic, public and farm-owned drinking and irrigation water systems. L&I began an outreach effort to the industry September 1, 2006.

L&I encourages all contractors and workers in the industry to make themselves aware of the changes in the industry and to take advantage of their grandfathering opportunities. Until December 31, 2006, there is an opportunity to grandfather previous work experience towards certification as an electrical administrator and as a specialty electrician and specialty plumber without examination. Roger Chick has been hired to assist with the outreach effort during the implementation period of the passed legislation, SSB 6225. For more information, you can contact Roger Chick at 360-292-5825 or email him at:

mailto:chir235@lni.wa.gov

Applications are available on our website at: *http://www.lni.wa.gov/TradesLicensing/Electrical/FormPub/*.

Description Of Work On Class B Labels

Class B labels have been received by L&I that contain very broad descriptions of work performed. Examples are “low voltage”, “added one receptacle” or “replaced 15 hp motor”. An inspection cannot be performed if the work and location are not clearly described on the returned Class B labels. The contractor must provide enough information on the label to identify the work. Help the department make the most of your and the inspector’s time by clearly identifying the work.

GFCI Protection For Laundry Receptacles

If you are unable to maintain a 6-foot separation between the laundry equipment outlet and adjacent laundry or utility sinks, as required in NEC 210.8(A)(7), L&I will allow a single receptacle for one appliance to be installed without ground fault circuit protection. This interpretation follows the guidelines found in NEC 210.8(A)(2), exception 2) for similar installations located in a garage. If you install a duplex receptacle within 6’ of an adjacent laundry or utility sink, then that receptacle must be GFCI protected.

NEC Article 680 Swimming Pools, Fountains, And Similar installations

Does the wiring method from the panel board to the hot tub or spa have to contain a copper equipment grounding conductor that is not smaller than 12 AWG?

NEC 680.42(C) is unclear on this issue. The NEC says, *“In the interior of a one-family dwelling or in the interior of another building or structure associated with a one-family dwelling, any of the wiring methods recognized in Chapter 3 of this Code that contain a copper equipment grounding conductor that is insulated or enclosed within the outer sheath of the wiring method and not smaller than 12 AWG shall be permitted to be used for the connection to motor, heating, and control loads that are part of a self-contained spa or hot tub or a packaged spa or hot tub equipment assembly.”*

The code is written in a permissive instead of the normal prescriptive manner. Research of past NFPA proposals on this section indicates that the requirement for a copper equipment grounding conductor applies only to the final connection from the maintenance disconnect to the connection at the hot tub or spa equipment. A wiring method that meets the requirements of the installation and contains an aluminum or copper equipment grounding conductor will be allowed from the service to the line side of the maintenance disconnect.

A maintenance disconnect is required in NEC 680.12 which says, ***“****One or more means to disconnect all ungrounded conductors shall be provided for all utilization equipment other than lighting. Each means shall be readily accessible and within sight from its equipment.”*

In addition, WAC 296-46B-680(3) requires that *“The maintenance disconnect and field installed listed electrical equipment for a hot tub, spa, or swim spa must be located at least five feet from the hot tub, spa, or swim spa.”*

Electrical Question of the Month

This Month’s Question: No overcurrent device shall be connected in series with any conductor that is intentionally grounded, unless:

A) The overcurrent device is part of a selectively coordinated distribution system.

B) Where the grounded conductor is part of an electrical service, and is attached to a made electrode.

C) The overcurrent device opens all conductors of the circuit, including the grounded conductor, and is designed so that no pole can operate independently.

D) None of the above. This is never allowed.

Last Month’s Question: An enclosed luminaire located within ___ feet of the waterline of a bathtub must be ground fault circuit interrupter protected? **A)** 3, **B)** 4, **C)** 5, **D)** 6. The answer is: **C)** [WAC 296-46B-410].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 8** **August 2006**

Driving Directions To The Inspection Site

Inspections can only be made if the electrical inspector can find the job site. Permits are being submitted that simply say "see mapping program". While our inspectors are encouraged to use mapping programs to help route their jobs for efficiency these programs cannot always be relied on to be accurate or updated. Due to the increase in construction there are new roads created on a daily basis. Many of these new sub-divisions are not reflected in the mapping programs for years.

WAC 296-46B-900(1)(d) *Driving directions and/or a legible map is provided for the inspectors' use.* Although a hand written map will be accepted, driving directions from the nearest well established road is the preferred method. Over the last several years the department has moved to storing all documents electronically. Permit applications that contain hand written maps have proved to be difficult to store and transmit to other service locations. The directions need to detail the route from the nearest well established road. Help use the inspector's time in the best way possible and avoid costly delays on your electrical inspection by providing good directions.

HVAC Task Force Update

Since early February of this year members of the heating, ventilation, air conditioning and refrigeration (HVAC/R) industry have been meeting monthly around the state to evaluate the level and type of regulation that is currently being imposed on the HVAC/R industry, and how it could better meet the needs of businesses, workers and consumers.

This group, called the HVAC/R Task Force, is compiling a report for the Legislature defining and exploring 5 separate scenarios for regulation of the HVAC/R industry. During the meetings, the group closely examined the requirements and demands on HVAC contractors and technicians, as well as the needs of consumers.

The meetings to finalize the report will continue through August, concluding with a final report by the task force for the Joint Legislative Audit and Review Committee (JLARC) defining and exploring scenarios for regulation of the HVAC/R industry.

Fall 2006 Stakeholder Meetings

The agenda for the electrical stakeholders meetings will include a fraud prevention presentation, Department of Occupational Safety and Health (DOSH-formerly WISHA) presentation, and an update on the electrical program activities from regional and central office staff. The meetings will be held from **6:00 PM-9:00 PM** at the following locations:

SEPTEMBER

14th Tumwater	7273 Linderson Way, Auditorium
20th Tukwila	12806 Gateway Dr
27th White Salmon	# 5 Town and Country Square

OCTOBER

5th Longview	Location to be announced
10th Everett	2320 California St.
11th Mount Vernon	2300 Market Street
18th Spokane	3410 W. Fort George Drive (Student Union Building)
19th Pullman	325 SE Paradise
25th Kennewick	2721 West 10th
26th Yakima	Location to be announced

NOVEMBER

1st Moses Lake	3001 West Broadway
8th Tacoma	Location to be announced
15th Bremerton	100 Oyster Bay Avenue

● New Electrical Technical Specialists Appointed

The Electrical Program is pleased to announce the appointment of Roger Chick and Doug Griffith as electrical technical specialists. Roger Chick is in the lead inspector position in the Bremerton service location and has been with the department for 12 years. He has accepted a six-month position in an important role of outreach and implementation of SSB 6225, an act relating to regulating the business of installing and maintaining domestic water pumping systems. Roger has proved to be an effective lead inspector and we are confident he will succeed in this project.

Doug Griffith, a master electrician with over 30 years experience as an electrician has joined the L&I electrical team. Most recently Doug was the electrical administrator for a commercial/industrial/UL508 contractor. Having been a representative for both electricians and specialty electricians on the Technical Advisory Committee (TAC) for five out of the last six cycles, Doug has submitted many proposals that have been written into rule. Additionally Doug has been deeply involved with specialty issues as a stakeholder for the last six years, and brings knowledge and experience to the team. "I have always aspired to be an electrical inspector, and I feel honored to be in a position to serve them." We welcome Doug to the Labor and Industries team**.**

● Outreach Point Of Contact For Domestic Well Implementation

An extensive article was included in last month's edition of the *ELECTRICAL CURRENTS* titled Opportunity To "Grandfather" Specialty Electrical And Specialty Plumber Certification For Those In The Pump Installation Business. An outreach from the department to those in the industry will begin September 1, 2006.

Roger Chick will be the point of contact. He will be aggressively searching out individuals and companies in the pump installation and well drilling industry that will be affected by the new electrical (and plumbing) law revisions. Roger Chick's contact information is mailto:chir235@lni.wa.gov and (360) 292-5825. Please note that his cell phone number will not be activated until September 1st. Applications for the pump installer combination contractor license/registration, "grandfathered" pump installer specialty plumbing and/or electrical certification, and pump installer trainee certification forms are now available on the Forms & Publications link on the L&I Contractor Registration, Plumbing and Electrical Web pages at: http://www.lni.wa.gov/TradesLicensing/

● Temporary Electrician Certificates

The department currently reciprocates with 14 other states for individual journeyman electrician certification reciprocity without examination. The states that have reciprocity agreements are Alaska, Arkansas, Colorado, Massachusetts, Minnesota, Montana, Nebraska, New Hampshire, New Mexico, North Dakota, Oklahoma, South Dakota, Utah, and Wyoming. Form F626-001-000 for electrician certification reciprocity can be found on the Forms & Publications link at: http://www.lni.wa.gov/TradesLicensing/Electrical/FormPub/default.asp

When an electrician comes from a state without a reciprocal agreement with the department, the applicant must present specific documentation before approval to take Washington's examination. If they have certification from another state, then they must provide documentation for their qualifying experience (per WAC 296-46B-945) from the state that issued them their electrician certification/license. If they come from a state that does not individually certify or license electricians, then they must document their experience with one of the following methods:

- For states that require electrical contractor licensing, an individual may take the appropriate electrician's competency examination when an appropriately licensed electrical contractor(s), registered apprenticeship training director, or nationally recognized contractor or labor organization files a notarized letter of experience with the department. This must be accompanied by payroll documentation which certifies and shows that the individual meets the minimum hour requirements described in WAC 296-46B-945(4), for journeyman applicants, or WAC 296-46B-945(9) for specialty applicants.
- For states that do not require electrical contractor licensing or registration, an individual may take the appropriate electrician's competency examination when the individual's employer(s) or registered apprenticeship training director, or nationally recognized contractor or labor organization files a notarized letter(s) of experience with the department. This must be

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accompanied by payroll documentation which certifies and shows that the individual meets the minimum hour requirements described in WAC 296-46B-945(4) for journeyman applicants or WAC 296-46B-945(9) for specialty applicants.

If the applicant meets the requirements and provides the documentation, a 20-day temporary certificate will be issued to allow time to take the exam. If the individual does not pass the examination within the 20-day window, they can apply for an additional 90-day temporary certification. Before the 90-day temporary certificate will be issued the department must receive verification of enrollment in a valid journeyman refresher course accredited by the department. Approved refresher courses include all courses marked as "Code Update" and any industry related course that includes "refresher" in the title of the course. The applicant is not approved to take the exam again until the refresher course is successfully completed and the course sponsor has notified central office of that completion.

Central office will approve the candidate to schedule and retake the examination. The applicant only has one opportunity to pass the examination while working under the second temporary permit. If they fail the examination, central office will revoke the second temporary permit. If the applicant wants to continue working in the electrical trade, he/she must obtain a training certificate until the examination is successfully completed.

The department contracts with LaserGrade to administer the examination. LaserGrade testing centers are at multiple locations throughout the state (and worldwide). Typically exams can be taken within 48 hours of contacting a testing center. Testing center information is available at the LaserGrade homepage at: http://www.lasergrade.com/.

● Correction Writer Is Online And Collecting Data

Correction writer has been online for a month now, collecting valuable data for the department. Prior to the rollout of the new software there was no efficient way to sort through the corrections written annually. This collected data will be important in assuring internal consistency as well as identifying the frequency of corrections for each electrical contractor.

Once enough data has been collected to ensure an adequate evaluation, the department will be able to identify the contractors with the most corrections per inspection. Central office will work with the problem violators to identify their particular deficiencies and track their progress toward reducing their corrections. The goal is to improve the performance of the identified electrical contractors, using outreach and education to reduce the number of corrections per inspection by at least 15%. This should improve the inspector's efficiency by reducing return trips. Additionally, this should raise the quality of initial installations done by the contractors and their electrical workers.

● Electrical Question of the Month

This Month's Question: An enclosed luminaire located within ___ feet of the waterline of a bathtub must be ground fault circuit interrupter protected? **A)** 3, **B)** 4, **C)** 5, **D)** 6.

Last Month's Question: A conductor type letter or letters used alone shall indicate a single conductor. What is the identifying letter suffix that indicates two insulated conductors laid parallel within an outer nonmetallic covering? **A)** B, **B)** D, **C)** R, **D)** M. The answer is **B.** [NEC 310.11(C)(2)]

Final Judgments of Electrical Laws
For the 2nd Quarter of 2006

Violator	Penalty
Violation – No Electrical Contractor's License	
Region 1 – North Puget Sound	
ALWAYS SERVICING INC, CAPELLA DR NW, ISSAQUAH WA	$ 500
BAGAOISAN, FERNIE, NE 120TH ST, SEATTLE WA	$ 500
BAKER, CRAIG, HAM RD, FERNDALE WA	$ 500
BLACKFORD, CHRIS, 35TH AVE W, LYNNWOOD WA	$ 1,500
BRANDON MILLER, PO BOX, MAPLE FALLS WA	$ 500
BUBIO, CARLOS, ADMIRAL WAY SW, SEATTLE WA	$ 500
CEASER, CHRIS, LOWELL LARIMER ROAD, EVERETT WA	$ 500
D & J CONSTRUCTION, FILBERT LN, BURLINGTON WA	$ 500
E R APPLIANCE SERVICE LLC, 40TH AVE. NE, TACOMA WA	$ 500
EASTHILL MECHANICAL INC., 172ND AVE. NE, REDMOND WA	$ 500
GNEWUCH, TOM, CROCKET RD., BLAINE WA	$ 500

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GREAT NW HANDYMAN SERVICES, 105TH PL W, EDMONDS WA	$	500
GREEN, ERIC, CASTLEROCK DR., BLAINE WA	$	250
HANSON, KARL, NE WAND RD, TROUTDALE OR	$	500
HUWA, PAUL, 218TH AVE SE, MAPLE VALLEY WA	$	500
IRONFIRE DESIGN & FABRICATION, NE 126TH PL #300, KIRKLAND WA	$	1,500
ISLAND SERVICE CO., PO BOX, FREELAND WA	$	500
JAMES, KEVIN, 210TH ST SW, EDMONDS WA	$	2,875
KHONGSAVANH, KHAMTA, P O BOX, INDEX WA	$	500
KOLLMAR, RICHARD, 120TH ST. SE, EVERETT WA	$	1,000
LANGNER, JIM, PO BOX, SULTAN WA	$	500
MECHANICAL AIR, 20TH ST. SE, EVERETT WA	$	500
MITCHELL CRANE AND EQUIPMENT CO., P.O.BOX, MEDFORD OR	$	1,500
MOUNTAIN MEN ELECTRIC, PO BOX , DEMING WA	$	500
ORTEGA, JIMMY, MAGRATH RD, BELLINGHAM WA	$	500
RUSCHA, RONALD, VISTA DELMAR, CAMANO ISLAND WA	$	500
SMITH, DARREN, HAMBERG ST SE, MONROE WA	$	500
THE POWER COMPANY, SMOKEY POINT BLVD, MARYSVILLE WA	$	500
THYSSENKRUPP ACCESS CORPORATION, 54TH AVE SUITE C, FIFE WA	$	500
VAST ELECTRICAL TECHNOLOGIES, NE. 68TH ST STE A100, REDMOND WA	$	500
WEST COAST ENTERPRISES, 196TH ST. SW., LYNNWOOD WA	$	3,000
Region 2 – King County		
APPROVE CONSTRUCTION AND DESIGN, S. BRIDGES, KENT WA	$	500
CONTRACTORS SPECIALTIES, W VALLEY HWY, AUBURN WA	$	500
DANAO, FERDINAND, 104TH PL SE, RENTON WA	$	500
DURAN, ANTONIO, N. 85TH ST., SEATTLE WA	$	500
FOLGEDALEN, ROBERT (NJORD), NE CAMANO DR, CAMANO ISLAND WA	$	500
GANNON, KORY, WILLIAMS AVE SO, RENTON WA	$	500
HENSLEY CONSTRUCTION, BAMBERG LN SE, OLYMPIA WA	$	500
HOME-CRAFTERS INC, NE 129TH PL, KIRKLAND WA	$	500
HYSONG, JAY, 17TH PL W, BOTHELL WA	$	500
LIN R. ROGERS ELECTRICAL INC, MACONI DR. ALPHARETTA WA	$	1,000
LINDSLEY, EDWARD, RUSTIC RD. S., SEATTLE WA	$	500
M JASPA COMPANY LLC, S. 146TH, TUKWILA WA	$	500
MASTERBUILT ESTATE HOMES INC, 212TH AVE SE, MAPLE VALLEY WA	$	500
PACIFIC MUSIC, CLEVELAND ST, REDMOND WA	$	500
PROBST & SON CUSTOM INTERIORS, WOODMONT BEACH RD S, SEATTLE WA	$	500
SAROYA, KULWINDER, SW. 347TH. PLACE, FEDERAL WAY WA	$	500
SHALINA HOMES LLC, 45TH AVE. NE, SEATTLE WA	$	500
SOUND BUILT HOMES INC., PO BOX, PUYALLUP WA	$	1,500
SUNSET HILL LLC, N NORTHLAKE WAY, SEATTLE WA	$	500
WAKEFIELD, CHARLES, 25TH AVE. NE, SEATTLE WA	$	1,000
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
ADVANCED FILTER & MECH, VALLEY AVE NW, PUYALLUP WA	$	1,500
C H S ENTERPRISES, CEDAR GLEN LN, PORT ANGELES WA	$	1,000
DASCHOFSKY, WAYNE, E 11TH STREET, TACOMA WA	$	500
EATON'S DRYWALL, N GIERIN CR LN, SEQUIM WA	$	500
FLOOR TO CEILING OF TACOMA LLC, PO BOX, TACOMA WA	$	500
GREAT GRAPHICS AND SIGNS INC., PO BOX, PUYALLUP WA	$	1,000
MARSHALL, TOMMY, SE 263RD ST, KENT WA	$	1,500
MATRIX SECURITY INC., N. HOLLYWOOD WAY, BURBANK CA	$	500
OLSEN, JERRRY, S. 342ND ST, AUBURN WA	$	500
RAINBOW HANDIMAN SERVICE, PO BOX, PORT ANGELES WA	$	500
SIGNATURE KITCHENS & INTERIORS, SMITH ST., PORT ORCHARD WA	$	500
YOUNG, TRACY, WEIHL RD, CLE ELLUM WA	$	500
Region 4 – Southwest Washington		
A & E SECURITY AND ELECTRONIC SOLUTIONS, NORTH HIGHWAY 99W, MCMINNVILLE OR	$	500
ANDERSON, JOHN, THOMAS AVENUE, SHELTON WA	$	500
BAY SHORE CONSTRUCTION LLC, HARRISON AVENUE NW, OLYMPIA WA	$	500
COLWELL, STEVE JR., HAZEL ST., KELSO WA	$	500
GARCIA ZUNIGA, JOSE, WINTER BRIGHT ROAD SE, OLYMPIA WA	$	500
GRAY GABLES CONSTRUCTION LLC, GRAY GABLES LN, HOQUIAM WA	$	500
GRITTON, GREG, DENTON LANE SE, LACEY WA	$	500
HAZLEWOOD, MICHAEL, IRONWOOD, LONGVIEW WA	$	500
HCG BUILDING TECHNOLOGIES INC., STEVENS AVE, SOLANA BEACH CA	$	500

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JACKSON HOMES, PO BOX, LACEY WA	$	500
JACKSON, ROBERT, CHURCH ROAD, MCCLEARY WA	$	500
JET HEATING, INC, PO BOX, SALEM OR	$	500
M JUHOLA INC., FARGER GARDEN CT., YACOLT WA	$	500
MCTURNAL, BILL, PO BOX, OLYMPIA WA	$	500
NAYDEN LLC, PO BOX, VANCOUVER WA	$	500
PACIFIC STONE & TILE LLC, MOTTMAN RD. SW, TUMWATER WA	$	500
PALENSKY DOZING INC, SE 359TH, AUBURN WA	$	500
PHILLIPS, GLEN, E. NORTH BAY RD, BELFAIR WA	$	500
RALPH'S MAINTENANCE, PO BOX, TACOMA WA	$	500
STANTON, KELLY, PO BOX, MCCLEARY WA	$	500
STEVENS, DAMON, KINNEY RD SW, OLYMPIA WA	$	500
USKOSKI, BEN, PO BOX, HEISSON WA	$	500
Region 5 – Central Washington		
8'S GATE, 93RD AVE. W., EDMONDS WA	$	1,000
BIG BEARS PLUMBING ROOTER LLC, 71ST ST. NW, GIG HARBOR WA	$	500
DONCO & SONS, INC., N. DALY ST., ANAHEIM CA	$	500
ENERSYS, ALTAMAR PLACE, SANTA FE SPRINGS CA	$	500
MORGAN, ROBERT, LUCY LANE, ZILLAH WA	$	500
MOUNTAIN WEST ELECTRIC INC, W HWY 26, BLACKFOOT ID	$	1,500
TR MASTERSON, W. GAGE, KENNEWICK WA	$	500
Region 6 – Eastern Washington		
ADVANCED HEATING & A/C LLC, N GOVERNMENT WAY SUITE, HAYDEN ID	$	500
BELFOR USA GROUP INC, WOODLAND PARK AVE N, SEATTLE WA	$	500
BENNETT HEATING & AIR CONDITIONING, N ALTAMONT, SPOKANE WA	$	500
BEST BUY STORES LP, PO BOX, MINNEAPOLIS MN	$	500
BOYD E HARRISON JR EXCV / UNDRGR, FLORENCE LN, CLARKSTON WA	$	500
CAMPBELL ELECTRIC INC, PO BOX, TWIN FALLS ID	$	500
COOLEY, RICHARD, PO BOX, SPRINGDALE WA	$	1,000
GLOBELINK TELECOM, TANAINA DR., ANCHORAGE AK	$	500
J E RENOVATIONS, N LACEY, SPOKANE WA	$	500
MCCORMICK JR, ROBERT, CUBA CT WA	$	500
MODERN SECURITY SYSTEMS INC, PO BOX, TACOMA WA	$	500
NORTH IDAHO PUMP CO INC, PO BOX, POST FALLS ID	$	6,000
SPOKANE DITCH & CABLE INC, PO BOX, SPOKANE WA	$	500
STEENHARD, ROBERT, N DUNN RD., CHATTAROY WA	$	250
TRI-PURE WATER RESOURCES, INC., N. ADAMS RD., SPOKANE VALLEY WA	$	500
Central Office		
AIRTECH OF WENATCHEE INC., KNOWLES RD, WENATCHEE WA	$	1,500
ALL VALLEY REFRIGERATION, PO BOX, YAKIMA WA	$	2,000
JOHNNY'S REFRIGERATION TECHNOLOGY, N 10TH, WALLA WALLA WA	$	500
REED, MARK, PO BOX, SEATTLE WA	$	500
Violation – Hiring Uncertified Electricians		
Region 1 – North Puget Sound		
ABSCO ALARMS INC, 36TH AVE W #E, LYNNWOOD WA	$	50
ALWAYS SERVICING INC, CAPELLA DR NW, ISSAQUAH WA	$	250
CJ ELECTRICAL SUPPLY & SVCS LL, NE 27TH PL, SAMMAMISH WA	$	100
E R APPLIANCE SERVICE LLC, 40TH AVE. NE, TACOMA WA	$	500
EASTHILL MECHANICAL INC., 172ND AVE. NE, REDMOND WA	$	250
MITCHELL CRANE AND EQUIPMENT CO., P.O.BOX, MEDFORD OR	$	500
NATIONAL SIGN CORPORATION, WESTLAKE AVE. N., SEATTLE WA	$	250
PRO VOLTAGE, 79TH AVE NE, EVERETT WA	$	500
SHELTON ELECTRIC, PO BOX, SHELTON WA	$	250
TRI-STAR ELECTRIC LLC, P.O. BOX, BUCKLEY WA	$	250
Region 2 – King County		
GREAT TECHNOLOGY WORLDWIDE LLC, 116TH AVE NE., BOTHELL WA	$	250
PACIFIC MUSIC, CLEVELAND ST, REDMOND WA	$	250
SOUND BUILT HOMES INC., P.O. BOX, PUYALLUP WA	$	375
SUNSET HILL LLC, N NORTHLAKE WAY SUITE 104, SEATTLE WA	$	125
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
CHIN'S ELECTRIC INC., 13TH PLACE S.W., FEDERAL WAY WA	$	250
DELTA A V SYSTEMS INC, S. E. INTERNATIONAL WAY, MILWAUKIE OR	$	500
EATON'S DRYWALL, N GIERIN CR LN, SEQUIM WA	$	250
ECONOMY SHEET METAL & HTG INC., STATE HWY 303 NE, BREMERTON WA	$	250
HARBOR BUILDERS, CROMWELL DR. N. W., GIG HARBOR WA	$	500
JEFF NELSON ELECTRIC INC, E WASHINGTON, SEQUIM WA	$	250

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SIGNATURE KITCHENS & INTERIORS, SMITH ST., PORT ORCHARD WA	$	100
Region 4 – Southwest Washington		
BELL HEATING INC, S. E. PIAZZA AVE., CLACKAMAS OR	$	250
MAGNOLIA HI-FI INC, S 231ST ST, KENT WA	$	250
MANZURA ELECTRIC, NE 61ST PLACE, VANCOUVER WA	$	250
OREGON AIRE INC., NE 33 DRIVE SUITE A, PORTLAND OR	$	500
SHARP ELECTRIC, NE 65TH AVE SPACE E, VANCOUVER WA	$	250
Region 5 – Central Washington		
DONCO & SONS, INC., N. DALY ST., ANAHEIM CA	$	250
ENERSYS, ALTAMAR PLACE, SANTA FE SPRINGS CA	$	250
MID STATES ELECTRIC CO INC, N. CONALCO DR, JACKSON TN	$	500
MOUNTAIN WEST ELECTRIC INC, W HWY 26, BLACKFOOT ID	$	3,250
VOSHALL ELECTRIC, PO BOX, ELLENSBURG WA	$	1,000
Region 6 -		
ADVANCED HEATING & A/C LLC, N GOVERNMENT WAY, HAYDEN ID	$	250
BELFOR USA GROUP INC, WOODLAND PARK AVE N, SEATTLE WA	$	250
CAMPBELL ELECTRIC INC, PO BOX, TWIN FALLS ID	$	250
J E RENOVATIONS, N LACEY, SPOKANE WA	$	250
MASTER ELECTRIC AND DESIGN CO, PO BOX, SPOKANE WA	$	1,750
MODERN SECURITY SYSTEMS INC, PO BOX, TACOMA WA	$	250
NORTH IDAHO PUMP CO INC, PO BOX, POST FALLS ID	$	125
TOWER ELECTRICAL SERVICES INC, E.MONTGOMERY DR., SPOKANE WA	$	250
WEST TECH INDUSTRIES, GRELLE AVE, LEWISTON ID	$	250
Central Office		
DEI INCORPORATED, P.O. BOX, HAYDEN ID	$	250
MERIT ELECTRIC, INC., 36TH AVENUE W., LYNNWOOD WA	$	900
MERIT MECHANICAL INC, 153RD AVE NE, REDMOND WA	$	100
PACIFIC ELECTRIC CONTRACTORS INC., N VAN MARTER, SPOKANE WA	$	100
PORTER ELECTRIC INC, NE ST JOHNS RD, VANCOUVER WA		1,400
Violation – Uncertified Electrician		
Region 1 – North Puget Sound		
ABERCROMBIE, DAN, SANTA FE TRAIL DRIVE, LENEXA KS	$	250
BAGAOISAN, FERNIE, NE 120TH ST, SEATTLE WA	$	250
BAKER, CRAIG, HAM RD, FERNDALE WA	$	250
BENSON, MICHAEL, NE 194TH AVE, PORTLAND OR	$	250
BLACKFORD, CHRIS, 35TH AVE W, LYNNWOOD WA	$	250
BUBIO, CARLOS, ADMIRAL WAY SW, SEATTLE WA	$	250
CASEY, BILL, P O BOX, BARING WA	$	250
DAHLKE, TRAVIS, 79TH AVE NE, EVERETT WA	$	250
DAY, KEN, E DR, EVERETT WA	$	50
DIETRICH, ROBERT, ,	$	250
FEYKO, LARRY, CRUSE ROAD, SEDRO-WOOLLEY WA	$	250
FORTNAM, NATHANIEL, , DECATUR WA	$	250
GEITER, LEANNA, 13TH ST. SW., PUYALLUP WA	$	250
GNEWUCH, TOM, CROCKET RD., BLAINE WA	$	250
GREEN, ERIC, CASTLEROCK DR, BLAINE WA	$	250
HANSON, KARL, NE WAND RD, TROUTDALE OR	$	250
HUWA, PAUL, 218TH AVE SE, MAPLE VALLEY WA	$	250
JAHANI, ALLEN, NE 126TH PL, KIRKLAND WA	$	250
JAMES, KEVIN, 210TH ST SW, EDMONDS WA	$	1,500
KHONGSAVANH, KHAMTA, PO BOX, INDEX WA	$	250
KOZODOY, YURIY, 192 ND.ST.SW, LYNNWOOD WA	$	250
LANGNER, JIM, PO BOX, SULTAN WA	$	250
MARTIAN, PAUL, 56TH AVE S, AUBURN WA	$	250
NAM, SANG, 60TH AVE. W, EDMONDS WA	$	250
ODECHUK, VIKTOR, PICNIC POINT RD, EDMONDS WA	$	250
ORTEGA, JIMMY, MAGRATH RD, BELLINGHAM WA	$	250
OTTO, FERNANDO, ROYAY AVE APT., MEDFORD OR	$	250
RILEY, JR, DENNIS, 172ND AVE. NE, REDMOND WA	$	250
ROSICH, RICK, 73RD PLACE W., MOUNTLAKE TERRACE WA	$	250
SMITH, DARREN, HAMBERG ST SE, MONROE WA	$	250
SWANNACK, BRANDON, 70TH AVE. E, FIFE WA	$	250
WILLIAMS, JUD, 39TH AVE NE, TACOMA WA	$	250
Region 2 – King County		
BENNETT, ALFRED, RENTON AV S, SEATTLE WA	$	250
DANAO, FERDINAND, 104TH PL SE, RENTON WA	$	250

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DENBOER, CHRIS, PO BOX, NORTH BEND WA	$	250
HILLIUS, RANDY, PO BOX, PUYALLUP WA	$	375
NAM, SANG, 60TH AVE. W, EDMONDS WA	$	550
ROSALES, RAYMOND, 131 ST. PL. SE., KENT WA	$	250
SUTHERLAND, GUY, CRAWFORD RD, LYNNWOOD WA	$	250
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
BATCHLOR, LARRY, CHICKENCOOP RD, SEQUIM WA	$	250
HICKEY, MIKE, PO BOX, TACOMA WA	$	250
HOUSTON, GREGERY, PO BOX, ORTING WA	$	250
MACDONALD, DARREN, 56TH AVE. S., AUBURN WA	$	250
MCVEIGH, WILLIAM, S. CHEYENNE, TACOMA WA	$	250
NELSON, JEFFREY, OLD OLYMPIC HWY, SEQUIM WA	$	250
SCHUROSKY, DANIEL, STATE HWY NE, BREMERTON WA	$	250
SHUTT, CLINTON, CEDAR GLEN LN, PORT ANGELES WA	$	750
TAYLOR, ALLEN, CROMWELL DR. N.W., GIG HARBOR WA	$	250
WELLS, DAN, 219TH ST. CT. E., GRAHAM WA	$	250
WILLIAMS, TODD, PO BOX, RAINIER WA	$	250
Region 4 – Southwest Washington		
COLWELL, STEVE JR., HAZEL ST., KELSO WA	$	250
DURKIN, RON, CITRUS RD. SW, ROCHESTER WA	$	250
GARCIA ZUNIGA, JOSE, WINTER BRIGHT ROAD SE, OLYMPIA WA	$	250
GRITTON, GREG, DENTON LANE SE, LACEY WA	$	250
LIGHT, JOSEPH, VAIL LOOP RD.SW, RAINIER WA	$	250
MCTURNAL, BILL, PO BOX, OLYMPIA WA	$	250
MICKELSON, RALPH, NE CEDAR CREEK RD., AMBOY WA	$	250
NELSON, RODNEY, 68TH AVE. CT. E., GRAHAM WA	$	250
PHILLIPS, GLEN, E. NORTH BAY RD, BELFAIR WA	$	250
SEROCK, EDWARD, 93RD AV NW, GIG HARBOR WA	$	250
SHELL, DEAN, W. 38TH STREET, VANCOUVER WA	$	250
SHERMAN, ANDREW, S.E. POPPY ST., PORTLAND OR	$	250
STANTON, KELLY, PO BOX, MCCLEARY WA	$	250
STEVENS, DAMON, KINNEY RD SW, OLYMPIA WA	$	250
TAYLOR, PATRICK, PO BOX, VANCOUVER WA	$	250
TAYLOR, WILLIAM, CORAL BURST ST., SANDY OR	$	250
THOMPSON, BRANDON, SUMMIT LAKE SHORE ROAD, OLYMPIA WA	$	250
VANKOOTEN, KENNETH, SE 356TH, AUBURN WA	$	250
VANNASSA, MICHAEL, 258TH AVENUE SE, ENUMCLAW WA	$	250
Region 5 – Central Washington		
BENNEDETTO, CLINTON, A THOMAS ST, MILAN TN	$	250
GREEN, DARIN, RD I 6, MOSES LAKE WA	$	250
HILL, MICHAEL, ALTAMAR PLACE, SANTA FE SPRNIGS CA	$	250
JEFFERSON, HARRY, MC LAUGHLIN, YAKIMA WA	$	250
KEITH, SOPOIN, ALTAMAR PLACE, SANTA FE SPRINGS CA	$	250
MARTIN, CHRISTOPHER, CHAPEL HILL DR, MILAN TN	$	250
MEHARRY, LAUREN, PANRAMA DR NE, MOSES LAKE WA	$	250
MORGAN, ROBERT, LUCY LANE, ZILLAH WA	$	250
SHAW, DON, N. DALY ST., ANAHEIM CA	$	250
VOSHALL, STEVEN, WENAS, ELLENSBURG WA	$	1,000
Region 6 – Eastern Washington		
BARDEN, JODY, PO BOX, POST FALLS ID	$	3,375
BEATTIE, WILLIAM, PO BOX, POST FALLS ID	$	250
BENNETT, STEVEN, N ALTAMONT, SPOKANE WA	$	250
CAMPBELL, DONOVAN, CAMARILLO WAY, TWIN FALLS ID	$	250
COOLEY, RICHARD, PO BOX, SPRINGDALE WA	$	1000
COX, JOSEPH, N LACEY, SPOKANE WA	$	250
HOLLOWAY, RICHARD, 7TH AVE S, TACOMA WA	$	250
LODAHL, TIESON, S CHRONICLE RD, SPOKANE WA	$	250
PICHETTE, THOMAS, E. 212 PRINCETON, SPOKANE WA	$	750
RAMSEY, RICK, REED ST, AMERICAN FALLS ID	$	250
ROSS, COOPER, S. BURNS RD, SPOKANE VALLEY WA	$	250
SEITZ, MATTHEW, E GROUSE LN, CHATTAROY WA	$	2,000
STIGUM, CASEY, N. 3RD ST, CRAIGMONT ID	$	250
Central Office		
DEFAYE, PHILIPPE, MARY AVENUE NW, SEATTLE WA	$	1,750
GERFIN, DAMON, NE 62ND ST, SEATTLE WA	$	250
HALME, DALE, NE 121ST CT, VANCOUVER WA	$	300

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JOHNSON, AARON, N CORBIN LN, GREENACRES WA	$	100
NORWOOD, DERRICK, HILTOP, PASCO WA	$	250
ORME, RAYMOND, PO BOX, KENT WA	$	1,250
ORNDORF, GENE, W COLUMBIA, SPOKANE WA	$	250
RAMSEY, ERIC, NE 65TH AVE, VANCOUVER WA	$	100
RENEAU, THOMAS, 186TH ST NE, ARLINGTON WA	$	200
TAYLOR, JESSE, NE 17TH AVE, VANCOUVER WA	$	500

Violation – No Electrical Work Permit

Region 1 – North Puget Sound

A D T SECURITY SERVICES INC., NORTHCREEK PKWY., BOTHELL WA	$	1,000
A E SERVICES INC, 240TH ST NE, ARLINGTON WA	$	250
A L C ELECTRIC CORPORATION, 196TH ST SW, LYNNWOOD WA	$	2,000
ABSCO ALARMS INC, 36TH AVE W #E, LYNNWOOD WA	$	500
ACERO, JORGE, PO BOX, GRANITE FALLS WA	$	250
ALWAYS SERVICING INC, CAPELLA DR NW, ISSAQUAH WA	$	250
ANCHOR ELECTRIC, 8TH PL. W., LYNNWOOD WA	$	250
ANDERSON ELECTRIC, 30TH DR SE, BOTHELL WA	$	250
BAGAOISAN, FERNIE, NE 120TH ST, SEATTLE WA	$	250
BALDRICH, RICHARD, 162ND ST SE, MONROE WA	$	250
BARRON HEATING & A/C INC., PO BOX, BELLINGHAM WA	$	1,000
BEL-RED HEATING & A/C INC., NE 126TH PL, KIRKLAND WA	$	250
BEST, DALE, 9TH AVE W, EVERETT WA	$	250
BJORGEN, IVER, 102ND PL. W., EDMONDS WA	$	250
BUBIO, CARLOS, ADMIRAL WAY SW, SEATTLE WA	$	250
BURNSTEIN, DAVID, COTTONWOOD COURT, BLAINE WA	$	250
CAREY, JIM, 8TH AVE SE, BOTHELL WA	$	250
CJ ELECTRICAL SUPPLY & SVCS LL, NE 27TH PL, SAMMAMISH WA	$	125
CRAIG KOCH PAINTING AND CONSTRUCTION, ABBY LANE, CAMANO WA	$	250
DINSMORE, JERRY, NE 123RD ST, SKYKOMISH WA	$	250
E R APPLIANCE SERVICE LLC, 40TH AVE. NE, TACOMA WA	$	250
EASTHILL MECHANICAL INC., 172ND AVE. NE, REDMOND WA	$	250
ELECTRI-CITY INC, BOTHELL HWY, MILL CREEK WA	$	1,000
FIRE PROTECTION INC, PO BOX, MILL CREEK WA	$	250
GNEWUCH, TOM, CROCKET RD., BLAINE WA	$	250
H D ELECTRIC LLC, PO BOX, EVERETT WA	$	500
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KOLLMAR, RICHARD, 120TH ST. SE, EVERETT WA	$	500
LAMBEAU ELECTRIC INC., S 21ST ST, MOUNT VERNON WA	$	50
LIGHTNING ELECTRIC INC, RATHBONE RD SUITE C, FERNDALE WA	$	250
LYON, ORVILLE, 15TH PL. SE, EVERETT WA	$	250
METALSMITHS INC, 22OTH ST SW, MOUNTLAKE TERRACE WA	$	1,000
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NORTHWOOD HEATING & AIR INC, PO BOX, WOODINVILLE WA	$	250
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THIESSEN, CHRIS, E MAIN, SULTAN WA	$	250
THYSSENKRUPP ACCESS CORPORATION, 54TH AVE SUITE C, FIFE WA	$	250
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TRUJILLO, ERIC, 22ND CT SE, MILL CREEK WA	$	250
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Region 2 – King County

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LIN R. ROGERS ELECTRICAL INC, MACONI DR., ALPHARETTA WA	$	500
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SHALINA HOMES LLC, 45TH AVE. NE, SEATTLE WA	$	250
SOUND BUILT HOMES INC., PO BOX, PUYALLUP WA	$	375
SUNSET HILL LLC, N NORTHLAKE WAY SUITE 104, SEATTLE WA	$	250
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ABSOLUTE AIR INC, E. HWY 01, PT ANGELES WA	$	250
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C H S ENTERPRISES, CEDAR GLEN LN, PORT ANGELES WA	$	500
CASTLE HEATING, PO BOX, SOUTH PRAIRIE WA	$	250
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GAYLORD INDUSTRIES, NACHES AVE SW STE 101, RENTON WA	$	250
GREAT GRAPHICS AND SIGNS INC., PO BOX, PUYALLUP WA	$	250
HALLIGAN, JOESEPH, 48TH ST, PORT TOWNSEND WA	$	250
MARTINEZ, JOE, MERIDIAN E., GRAHAM WA	$	250
MATRIX SECURITY INC., N. HOLLYWOOD WAY, BURBANK CA	$	250
MCCOY ELECTRIC & COMM INC, MCNEELY ST, BUCKLEY WA	$	500
MCCOY, KEVIN, MCNEELY ST, BUCKLEY WA	$	250
NORTHWEST CLIIMATE CONTROLS INC., 23RD STREET SE, PUYALLUP WA	$	1,000
OLMSTEAD, DEL, 70TH ST E, BONNEY LAKE WA	$	250
OUCHS, JIM, 42ND ST. E., EDGEWOOD WA	$	250
RAINBOW HANDIMAN SERVICE, PO BOX, PORT ANGELES WA	$	250
SIGNATURE KITCHENS & INTERIORS, SMITH ST., PORT ORCHARD WA	$	250
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HAMER ELECTRIC, INDUSTRIAL WAY, LONGVIEW WA	$	250
HAZLEWOOD, MICHAEL, IRONWOOD, LONGVIEW WA	$	250
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JET HEATING, INC, PO BOX, SALEM OR	$	250
JOHN WATTS ELECTRIC INC., S.E. EVERGREEN HWY, VANCOUVER WA	$	500
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MAGNOLIA HI-FI INC, S 231ST ST, KENT WA	$	2,000
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DISSMORE ELECTRIC EAST, ATKINSON DRIVE, HONOLULU HI	$	250
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HANSON HOMES, PO BOX, EAST WENATCHEE WA	$	250
IBLINGS ELECTRIC, S. WENATCHEE UNIT 1, WENATCHEE WA	$	250
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CAMPBELL ELECTRIC INC, PO BOX, TWIN FALLS ID	$	250
CITY ELECTRIC, PO BOX, COTTONWOOD ID	$	250
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COMFORT MECHANICAL CONTRACTORS INC., PO BOX, GREENACRES WA	$	2,000
COOLEY, RICHARD, PO BOX, SPRINGDALE WA	$	1,000
DEHAMER, GREGORY, BLACKBERRY, CHENEY WA	$	250
ENERGIZED ELECTRIC INC., PO BOX, SPOKANE WA	$	1,000
EPCON SIGN COMPANY, N. HELENA ST., SPOKANE WA	$	250
FIRST STEP INTERNET, PO BOX, MOSCOW ID	$	2,000
FLERCHINGER ELECTRIC INC, 24TH ST, CLARKSTON WA	$	250
INLAND CELLULAR TELEPHONE CO, PO BOX, ROSLYN WA	$	250
KHIMICH, ANDREY, LATOUR DR., SACRAMENTO CA	$	250
MODERN SECURITY SYSTEMS INC, PO BOX, TACOMA WA	$	250
NOLAN HEATING & AIR INC, PO BOX, COLFAX WA	$	250
NORTH IDAHO PUMP CO INC, PO BOX , POST FALLS ID	$	1,350
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POWER CITY ELECTRIC INC., PO BOX, SPOKANE WA	$	1,000
ROBERTS, MARLIN, W CASBERG / BURROUGHS RD, DEER PARK WA	$	250
SHARP, TODD, GLENGROVE RD, DEER PARK WA	$	250
SIMPLEXGRINNELL LP, PO BOX, BOCA RATON FL	$	1,000
SPOKANE DITCH & CABLE INC, PO BOX, SPOKANE WA	$	250
STURM HEATING INC., N NELSON, SPOKANE WA	$	1,000
TAD GROPP ELECTRIC INC, PO BOX, SPOKANE WA	$	250
Central Office		250
ANDREWS MECHANICAL, INC., E. WABASH AVENUE, SPOKANE WA	$	250

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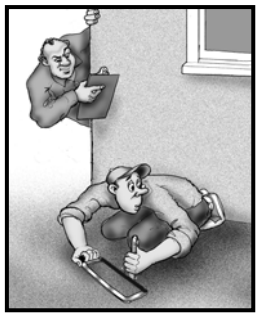
Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 7** **July 2006**

Compromising A Grounding Electrode System Is A Gross Violation



A properly installed grounding electrode is the foundation of a safe electrical system. The National Electrical Code is very specific on the electrodes that are permitted for grounding and have dedicated an extensive article to the materials, sizing and installation requirements of grounding and bonding; NEC Article 250.

This issue has been addressed several times in past newsletters yet the department continues to issue an alarming amount of citations for cut off ground rods. In each case the installer, company and administrator have been held accountable. This offense is considered a gross violation and is subject to a double penalty and possible suspension or revocation of licensing and/or certification.

NEC 250.53(G) requires that rod and pipe electrodes *"be installed such that at least 2.44 m (8 ft) of length is in contact with the soil. It shall be driven to a depth of not less than 2.44 m (8 ft) except that, where rock bottom is encountered, the electrode shall be driven at an oblique angle not to exceed 45 degrees from the vertical or, where rock bottom is encountered at an angle up to 45 degrees, the electrode shall be permitted to be buried in a trench that is at least 750 mm (30 in.) deep. The upper end of the electrode shall be flush with or below ground level unless the aboveground end and the grounding electrode conductor attachment are protected against physical damage as specified in 250.10*."

If ground rods cannot be driven the full distance then one of the other methods described in NEC 250.53(G) must be followed, or the installer can change the type of grounding electrode they are installing. In some cases it may be beneficial to install plate electrodes instead of ground rods. Plate electrodes must meet the requirements of 250.52(A)(6) and 250.53(H) when used as a grounding electrode. (*Illustration is courtesy of Code Check.)*

Opportunity To "Grandfather" Specialty Electrical And Specialty Plumber Certification For Those In The Pump Installation Business

The Washington State Ground Water Association was the primary proponent of a successful bill (SSB 6225) during the 2006 legislative session. The industry remains regulated by Contractor Registration laws (RCW 18.27), Electrical Installations laws (RCW 19.28), and Plumber Certification laws (RCW 18.106) but the bill has consolidated and streamlined many of the requirements for the contractors and workers performing these installations.

Labor and Industries' Plumbing and Electrical Sections are creating a combined General Contractor and Electrical Contractor Specialty Licensing/Registration document that will enable those in the Domestic Pump or Pump and Irrigation systems business to perform this work under a single license, bond and insurance coverage, and license renewal.

Worker certification (**both** plumbing and electrical) is now required for all pump installation work on domestic water systems and irrigation water systems. The department can no longer allow placement of an electric pump motor in a well without proper worker electrical certification, nor does the new law allow the installation of associated domestic or irrigation water piping without proper worker specialty plumbing certification. If you have the qualifying experience detailed in the law, and you submit the appropriate documentation of your experience and the applicable fees to the department **prior to January 1, 2007, you can "grandfather" and receive the necessary certification without examination**.

What is the qualifying experience for the new specialty plumber certification? The new law (RCW 18.106.050(3)) says that individuals must "*provide evidence to the department* ***prior to January 1, 2007****, that they have been employed in the pump and irrigation business as defined by RCW 18.106.010(10)(c)* ***for not less than four thousand hours in the most recent four calendar years***" in order to qualify the specialty plumbing certification without examination. You must have been employed by a registered general or specialty contractor defined by chapter 18.27 RCW or an appropriately licensed electrical contractor defined by chapter 19.28 RCW.

What is the qualifying experience for specialty electrician certification? The law (RCW 19.28.191(1)(g)(iv)) states "*Individuals who are able to provide evidence to the department,* ***prior to January 1, 2007****, that they have been employed as a pump installer in the pump and irrigation or domestic pump business by an appropriately licensed electrical contractor, registered general contractor defined by chapter 18.27 RCW, or appropriate general specialty contractor defined by chapter 18.27 RCW* ***for not less than eight thousand hours in the most recent six calendar years*** *shall be issued the appropriate certificate by the department upon receiving such documentation and applicable fees.*" Nearly identical language for qualifying for specialty administrator certification is in RCW 19.28.051.

Appropriate experience for the 03A-Domestic Pump specialty will be established with the specific Affidavit of Experience that is part of the "grandfathering" application package. For claims of installation experience in the 03-Pump and Irrigation specialty, additional documentation must be attached to the Affidavit of Experience proving appropriate hours of experience installing equipment unique to the (03) scope. This documentation can include copies of previous electrical permits, contracts, work orders, invoices, or other proof of installing large 3-phase pumps and control equipment and/or over 7½-horsepower, single-phase pumping systems during the qualification time period allowed by the law.

Combination plumbing-electrical licensing and certification will only be created for those exclusively in the 03-pump and irrigation or 03A-domestic pump specialties that are doing pump installations. The law does not prohibit individuals with broader scope plumbing or electrical certification from being able to "grandfather" the corresponding other trade's certification necessary for doing a complete pump installation. The law only intends the combination contractor license/registration or combination pump installer plumbing/electrical certification to be available to those working exclusively in the pump installation business.

Is there additional information available? Yes. Applications for the pump installer combination contractor license/registration, "grandfathered" pump installer specialty plumbing and/or electrical certification, and pump installer trainee certification will be available in late July on the Forms and Publications links on the L&I Contractor Registration, Plumbing, and Electrical Web pages at: http://www.lni.wa.gov/TradesLicensing/.

● Class B Inspection Labels Update

During the last six months the department has seen a **significant increase** in the proper use of Class B labels. Effective November 25, 2005 the scope of Class B increased along with the sale of the labels. Almost immediately it was identified that the labels were being used for work that was not in the scope of Class B. Several newsletter articles were written on the proper use of the labels in an attempt to educate the users and promote the use. The result has been a reduction in the misuse of the labels.

The only issue that is still outstanding with the use of Class B labels is the readability of the label that is filled out by the installer. In most cases the label is illegible because it was filled out with a worn out permanent marker causing wide lines and merging of words. When this happens the contractor must be contacted and the proper information must be obtained and entered in the electrical permits database. This takes many hours and wastes time for department staff and the contractor.

Please fill out Class B labels with a pen that is compatible with the space available on the labels and avoid smearing of the writing. PRINT carefully and legibly so the information will be clear to anyone that needs to read it. Pass this information on to all your electricians that are filling out the labels on the jobsite. The creation of these labels has been a huge benefit to customers, contractors, and the department. Let's continue to use them properly so we can all continue to save time and money.

● Correction In The Printed (May 1, 2006 – Green Cover) WAC 296-46B.

The correct fee for a swimming pool inspected separately (WAC 296-46B-905(1)(a)(v) is $73.00 not $48.12 as printed. The fee is correct in the online permit purchasing software.

● Electrical Question of the Month

This Month's Question: A conductor type letter or letters used alone shall indicate a single conductor. What is the identifying letter suffix that indicates two insulated conductors laid parallel within an outer nonmetallic covering? **A)** B, **B)** D, **C)** R, **D)** M.

Last Month's Question: Space heating cables with orange leads indicate a circuit voltage rating requirement of ____ volts, nominal. **A)** 120, **B)** 240, **C)** 277, **D)** 480. The answer is **D.** [NEC 424.35]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 6** **June 2006**

Inspectors Safety on the Jobsite

Electrical inspectors are exposed to various jobsite hazards daily while performing their job duties. The Department takes the welfare of its employees very seriously. Any jobsite where an inspection is to be made must meet minimum safety requirements before the inspection can be performed.

In particular:

- Adequate access ways must be maintained in the inspection area.
- This includes removing tripping hazards and sufficiently covering or identifying any floor openings.
- Stairways must be protected on all open sides. In areas where ambient light is not sufficient then adequate light must be provided for the inspection. If the inspection requires a vertical elevation change of more than 18 inches then a ladder, stairway or ramp must be provided.

These minimum safety requirements are intended to be in line with the requirements of WAC 296-24, General Safety and Health Standards. If the jobsite does not meet the minimum safety requirements then a correction will be written and a trip fee may be assessed.

New Service Will Show Corrections Online

Our new software application, Correction Writer will be implemented in June to offer an important service to the contractors. Corrections for the jobs inspected the day prior will be available for the contractors to view as soon as the inspectors upload the data, typically by 9:00 AM in the morning.

We believe this will allow you to increase the efficiency of your business by reducing your time and travel costs. Correction Writer allows us to closely monitor the exact type and frequency of installation deficiencies and work closely with contractors getting too many corrections to encourage them to improve. We expect to make consistent progress toward our goal of reducing the number of corrections written per inspection. A higher quality initial installation will be a benefit to the electrical contractor and to the safety of the citizens of Washington that live and work in the buildings wired.

What Is An "Emergency" Inspection Relative To Permit Fees?

Emergency inspections are those required due to unforeseen circumstances outside the control of the property owner or contractor initiating the inspection request. These "after hours" inspections are usually the result of weather damage, natural disasters, or fires and involve electrical utility companies, law enforcement officers, or other regulatory agencies and not a business need. Emergency inspection fees are in WAC 296-46B-905(5)(f) and include a fixed surcharge ($91.80) in addition to the regular inspection fee from the rest of the fee schedule, based on the work needing inspection.

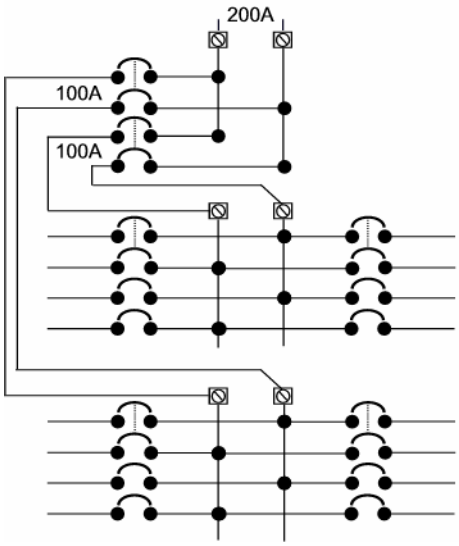
The term "emergency" does not include pre-scheduled inspections needed on weekends or after normal working hours. Typically these are inspections arranged for equipment testing, service changes (or service shut-downs), or to allow work and inspection to be safely completed at times that will have the least impact on a business. Non-emergency after hours inspections are charged the regular inspection fee for the work done, **plus** the cost to the department for the inspector's travel time (portal-to-portal) to perform the after hours inspection. The fee is $73.00 per hour and found in WAC 296-46B-905(11).

Clarification—Equipment Used For Temporary Construction Services.

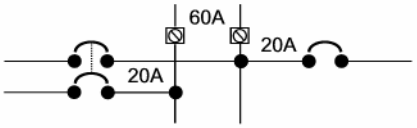
The large number of calls we received about the article titled "Main Breaker Requirement For Temporary Construction Panelboards" in the May 2006 ELECTRICAL CURRENTS indicates further clarification is needed about the equipment affected. The May article was the result of a request by a contractor for a formal interpretation that would ensure consistent inspections (and results) statewide for the construction temporary services he built with panelboards as the service equipment. These are not new requirements for panelboards, the same language has been in the NEC for decades.

If you are using a listed "Panelboard" manufactured under ANSI/UL 67 and are building an assembly of weatherproof receptacle outlets supplied by branch circuits from the panelboard, then you must follow the manufacturer's installation instructions for this equipment. As detailed in the May newsletter, if classified as a lighting and appliance panelboard (NEC 408.34) then it must be protected **on the supply side** by not more than two main circuit breakers or two sets of fuses (NEC 408.36). This provision for two mains does not mean two load overcurrent devices on a single set of busing, but applies only to specialized panelboards with two sections of busing, each protected on the supply side by individual main breakers as illustrated in the diagrams below.

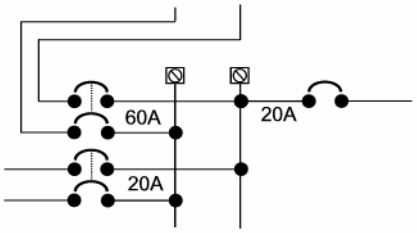
Lighting and appliance panelboard protected on the supply side by two main circuit breakers



Lighting and appliance panelboard NOT protected on the supply side by two main circuit breakers



Lighting and appliance panelboard protected on the supply side by a back-fed main circuit breaker installed with a breaker hold-down kit per NEC 408.36(F)



If you are using equipment listed under ANSI/UL 231 as a "Power Outlet" and identified as "Suitable For Use As Service Equipment For Temporary Sites", then in most cases a main breaker is not required by the manufacturer's installation instructions. Typically, these units have the receptacle outlets integrated into the enclosure cover and they are constructed to a different standard than panelboards.

● Do HVAC Damper Actuators Need Motor Disconnecting Means Per NEC Article 430?

No, an actuator is considered a **component of the damper assembly** and is not subject to the disconnect requirements of NEC 430.101. Though often called by other names such as damper motors, damper operators, or motor packs, **damper actuator** is the appropriate term. A damper actuator is not a motor subject to NEC Article 430.

Dampers are available with a wide variety of actuators installed. Some dampers are shipped without actuators and intended for installation of an actuator in the field after the damper has been mounted in the HVAC mechanical duct system. All actuators on UL classified Smoke and combination Fire Smoke Dampers must be furnished and installed by the damper manufacturer at the time the damper is manufactured. Regardless of the specific application, all dampers should be installed in accordance with the installation instructions for the damper assembly.

● Electrical Question of the Month

This Month's Question: Space heating cables with orange leads indicate a circuit voltage rating requirement of ____ volts, nominal.
A) 120, **B)** 240, **C)** 277, **D)** 480.

Last Month's Question: A lighting and appliance branch-circuit panelboard is one having more than ____ percent of its overcurrent devices protecting lighting and appliance branch circuits.
A) 5, **B)** 10, **C)** 15, **D)** 20, The answer is . **B** [NEC 408.34]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 5** **May 2006**

Electrical Corrections Initiative

When corrections are issued, contractors and L&I incur significant costs. Their ability to provide efficient and effective customer service is inhibited by having to go back and make and inspect corrections.

To help correct this situation, L&I is preparing to implement an initiative to better track and reduce the number of corrections received by customers. L&I will begin using a new addition to inspectors' mobile computing system on June 2nd. Inspectors will be using their computers and printers, in the field, to write and record all corrections. All customers will be able to view the corrections online using the L&I website tool for viewing inspection activity.

As a part of this initiative, L&I will be able to track correction data across the state. Beginning in September, L&I will review the total corrections issued from June through August and begin working very closely with the 5% of contractors who receive the most corrections per inspection to encourage them to reduce their corrections. L&I's goal is to reduce the corrections per inspection issued to those contractors by 15% by July 1, 2007.

L&I will primarily emphasize outreach and training for the contractors and their electricians, included in the initiative, in reaching the goal. It is L&I's hope that contractors in the target group will take responsibility for their work and be proactive in improving their installations. In July 2007, L&I will repeat this process and raise the goal to 20% improvement during the following year.

IEC Washington State "Apprentice of the Year" Wins National Competition

The Department would like to acknowledge the accomplishments of apprentice Jerrad Krause from Bellingham Washington. Jerrad competed and placed first in the IEC Washington State "Apprentice of the year" competition. He then went on to represent the IEC Washington State chapters and placed first at the national competition earning him the title of IEC "National Apprentice of the Year". The competition lasted three days and consisted of hands-on labs, interviews and written examinations. Congratulations to Jared for a job well done.

Main Breaker Requirement For Temporary Construction Panelboards

NEC 408.34 classifies panelboards, for the purpose of article 408, as either a **lighting and appliance branch-circuit panelboard** or a **power panelboard**. In addition it defines a lighting and appliance branch circuit as a branch circuit that has a connection to the neutral of the panelboard and that has overcurrent protection of 30 amps or less in one or more conductors.

NEC 408.34 defines a lighting and appliance branch circuit panelboard as one having more than 10 percent of its overcurrent devices protecting lighting and appliance branch circuits. A power panelboard is one having 10 percent or fewer of its overcurrent devices protecting lighting and appliance branch circuits. The definition of a lighting and appliance branch circuit is very inclusive and qualifies nearly all common panelboards as a lighting and appliance branch-circuit panelboard. Temporary construction panelboards meet the definition of a lighting and appliance branch circuit panelboard and must have overcurrent protection as required by 408.36.

NEC 408.36 *Each lighting and appliance branch circuit panelboard shall be individually protected on the supply side by not more than two main circuit breakers or two sets of fuses having a combined rating not greater than that of the panelboard*.

A main breaker is required to protect the bussing on a temporary construction panelboard. If a back fed breaker is to be utilized then a retainer clip must be installed. In an attempt to be proactive with the industry the department will allow temporary construction panelboards without main breakers to be installed **until July 1, 2006. After that date all temporary construction panelboards must comply with the full requirements of NEC 408.**

Provisional Electrical Work Labels

Effective November 22, 2004, a provisional electrical work permit label was created to allow the electrical contractor to begin their electrical work immediately and then get the normal electrical permit within two working days. These labels allow a way for a contractor to have a valid permit, especially when performing service or maintenance work where the exact nature of the repair is unknown until the electrician is on the job site. No permit is necessary for Class A permit exempt work. Class B basic electrical work labels may also be used when applicable.

The provisional electrical work permit label is an acceptable substitute for a normal permit for two working days. **It is not mandatory to use a provisional label**, however it serves as an alternative to the normal permit purchasing methods (e.g. Internet, contactor deposit account, phone, FAX) that may not be easily available to the worker in the field making the permit purchasing decision prior to beginning the work.

Only licensed electrical (or telecommunications) contractors can purchase provisional electrical work permits. Provisional electrical work permit labels are sold in blocks of twenty for $200. Once purchased, they may be divided up between the contractor's service vehicles or personnel. The labels are bright yellow in color to easily differentiate them from the similarly formatted (bright pink) Class B basic electrical work labels. Refunds are not available for provisional electrical work permit labels, and the $10 individual label cost is not deducted from the normal permit fee. The provisional labels serve for two days as a valid electrical permit. They are not valid in city jurisdictions who perform their own electrical inspections.

If a provisional label is used, the certified electrician or telecommunications worker performing the installation must affix the provisional permit label on the cover of the panelboard, overcurrent device, or telecommunications equipment supplying the circuit or equipment **prior to beginning the work**. The labels must be **completely** filled in using sunlight and weather resistant ink. The contractor portion and job site portion of the label **must include all of the following information**:

DATE OF WORK	SITE ADDRESS, CITY, COUNTY
ELECTRICAL CONTRACTOR'S NAME	SITE OWNER NAME
ELECTRICAL CONTRACTOR'S LICENSE #	DESCRIPTION OF WORK
INSTALLING ELECTRICIAN'S CERTIFICATE #	

The contractor's portion of the label must be returned to the L&I electrical office having jurisdiction for the inspection, within two working days after the job site portion of the label is affixed. Either receipt by L&I or postmark to a valid L&I electrical address is acceptable for meeting this requirement.

Unsupervised HVAC/R Trainees

There is a provision in rule (WAC 296-46B-965(11)) that allows a certified trainee to work without supervision "*when installing HVAC thermostat cable when the system consists of a single thermostat in one- and two-family dwelling units where line voltage power is not connected to the system.*" This specific (and limited) permission was intentionally allowed as a result of compromise by industry representatives drafting the original HVAC/R scope of work in 1998. The unsupervised work was intended to accommodate the needs of the low-cost affordable housing industry and was allowed only because the electrical installation work was minimal and the unsupervised trainee would be exposed to no live electrical conductors in the structure.

At the winter electrical stakeholder meetings, we were asked, "Can trainees work unsupervised when installing thermostat cables on a retrofit of an outside A/C or heat pump unit if that specific equipment has not been energized?" **The answer is no**. WAC 296-46B-965(11) that (HVAC/R) only allows trainees to work unsupervised when installing thermostat cables in a one- and two-family dwelling new construction environment where nothing is energized except a construction temporary service.

Marking Required For HVAC Equipment

HVAC installers and contractors please take notice. We want you to have the opportunity to avoid the expense of return trips to make corrections by being aware of all the requirements that apply to your equipment installation or modification. The electrician must do the field marking on the nameplate provided by the manufacturer and identify any electric strip heating modules you have installed or added that are not identified at the factory.

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NEC 424.28(A) states, "***Marking Required****. Each unit of fixed electric space-heating equipment shall be provided with a nameplate giving the identifying name and the normal rating in volts and watts or in volts and amperes*" and "*Electric space-heating equipment intended for use on alternating current only or direct current only shall be marked to so indicate. The marking of equipment consisting of motors over 1/8 hp and other loads shall specify the rating of the motor in volts, amperes, and frequency, and the heating load in volts and watts or in volts and amperes.*" Many installers are not marking the nameplate for the size of heating elements installed. Part (B) of the article specifies, "***Location****. This nameplate shall be located so as to be visible or easily accessible after installation.*"

● Ampacity Of Type NM Cables Used For Range Or Furnace Circuits

Many contractors and their customers prefer to use copper conductors for all of their building wiring. Some equipment manufacturers still specify "Use Copper Conductors Only" on the equipment or in their installation instructions for branch-circuit wiring terminations.

NEC 334.80 states, "*The ampacity of Types NM, NMC, and NMS cable shall be determined in accordance with 310.15. The ampacity shall be in accordance with the 60°C (140°F) conductor temperature rating. The 90°C (194°F) rating shall be permitted to be used for ampacity derating purposes, provided the final derated ampacity does not exceed that for a 60°C (140°F) rated conductor.*"

A look at the appropriate table (NEC Table 310.16) for this type of conductor makes it clear that the maximum (60°C) ampacity for 8 AWG copper NM cable is **40 amps**. Even though you are permitted to begin derating from the (90°C) 55 amp value, there is little need to derate for conductor fill or ambient temperature in most NM cable range and furnace branch-circuit installations. You are never permitted to exceed the 8 AWG NM cable 40 amp rating.

● Concrete Encased Electrode- Materials, Installation and Inspection

Concrete encased electrodes are defined in NEC 250.52(A)(3) as an acceptable electrode permitted for grounding. The electrode must be encased by at least 2 inches of concrete, located within and near the bottom of a concrete foundation or footing that is in direct contact with the earth. In addition the electrode must be at least 20 feet of one or more bare or zinc galvanized or other electrically conductive coated steel reinforcing bars or rods of not less than ½ inch in diameter or consisting of at least 20 feet of bare copper conductor not smaller than 4 AWG.

Typically, a concrete encased electrode system is referred to as a UFER ground system in recognition of the individual that pioneered the effective and inexpensive grounding system. Numerous studies have proved that a properly installed concrete encased electrode system will maintain a resistance of four ohms or less to ground for the life of the foundation.

In order to ensure that the concrete encased electrode is installed properly reinforcing bars or rods encapsulated with non-conductive coating such as epoxy **cannot be used**. The required 20 feet of reinforcing bar or rod is not required to be a continuous piece and is allowed to be joined together by tie wire to satisfy the length requirement. The minimum length of concrete encased electrode is not required to be connected to the rest of the rebar in the footings and walls but is recommended. In addition no vapor barriers or insulating material that effectively isolates the concrete footing or foundation from the earth can be used.

The department will allow two verification methods of a concrete encased electrode installation:

Method 1: **Visual inspection of the electrode**. At the time of inspection of other work on the project, a visual inspection of the exposed (20 ft. minimum) reinforcing steel or of the termination of a copper grounding electrode conductor to the (20 ft.) of reinforcing steel near the bottom of a concrete foundation or footing. (Termination of copper wire to rebar must always be visually inspected whether within or external to the concrete). If a special inspection trip is required to inspect a grounding electrode conductor, a trip fee will be charged for that inspection in addition to the normal permit fee.

Method 2: **Provisions for Continuity Check**: The electrical contractor can provide, at the time of the service inspection, a method so the inspector can verify the resistance of the electrode conductor along its entire length. The department will allow the attaching a length of copper wire to one end of the electrode that reaches the location of the grounding electrode conductor that will enable the inspector to measure the resistance with a standard resistance tester. The concrete encased electrode does not have to be accessible for a visual inspection.

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● Electrical Question of the Month

This Month's Question: A lighting and appliance branch-circuit panelboard is one having more than ____ percent of its overcurrent devices protecting lighting and appliance branch circuits.
A) 5, **B)** 10, **C)** 15, **D)** 20

Last Month's Question: All device and junction boxes 6" by 6" or smaller for NEC 700 emergency systems and circuits must be _____ in color, both inside and outside.
A) red, **B)** orange, **C)** yellow, **D)** black. The answer is: **B)** [WAC 296-46B-700(3)].

Final Judgments of Electrical Laws
For the 1st Quarter of 2006

Violator		Penalty
Violation – No Electrical Contractor's License		
Region 1 – North Puget Sound		
ABSOLUTE GAS SERVICES, PO BOX, MILL CREEK WA	$	500
BENNETT DESIGN PERFORMANCE, PO BOX, MONROE WA	$	500
CDM CONSTRUCTORS INC, N.E. 1ST ST, SUITE 201, BELLEVUE WA	$	500
COLEMAN SPAS, , REDMOND WA	$	500
D & J CONSTRUCTION, FILBERT LN, BURLINGTON WA	$	500
EXTREME SECURITY, STATE ROUTE 92, LAKE STEVENS WA	$	500
EYE ON SECURITY, NE. 95TH AVE. ST., REDMOND WA	$	3000
KITCHENS & DESIGN, E. HICKOX ROAD, MT. VERNON WA	$	500
MORRISON HOME INNOVATION LLC, 206TH ST SW, LYNNWOOD WA	$	500
OLD WORLD CONST. RESOURCES LLC, 13TH AVE NW, SEATTLE WA	$	500
P D R ENTERPRISES, INC., PO BOX, EDMONDS WA	$	500
REBAR MACHINE SERVICES INC., EMERALD AVE, LAS VEGAS NV	$	500
RELIABLE FLOOR COVERING INC, MAIN STREET, EDMONDS WA	$	500
ROMAN TECHNOLOGIES, INC., GARDEN BROOK DRIVE, FARMERS BRANCK TX	$	500
Region 2 – King County		
BURIEN NATURAL GAS SERVICE INC., SW 154TH STREET, BURIEN WA	$	500
COOK, DANIEL, OLD OWEN RD, MONROE WA	$	3000
CORN, KIM, 171ST AVE SE, BELLEVUE WA	$	500
CROWN MOBILE HOME SETUP & SERVICES, , OLYMPIA WA	$	500
ERICKSEN, MARK, NE 57TH ST, SEATTLE WA	$	500
GARDNER, GLENN, N. 40TH ST., SEATTLE WA	$	500
GILLILAND, DOYLE, NE 61 ST., REDMOND WA	$	500
GRINNELL, TOM, OLD OWEN RD, MONROE WA	$	1500
GUSTAFSON, KARL, LOVES HILL RD, SULTAN WA	$	500
MAGNUSOHN JR., PATRICK, DELRIDGE WAY SW #B, SEATTLE WA	$	500
QAYED, FRANK, SCOTT BLVD., SANTA CLARA CA	$	500
REHABITAT NORTHWEST INC., 16TH AVE SW, TUKWILA WA	$	500
SEATTLE'S BEST WINDOWS, INDUSTRY DR STE 220, SEATTLE WA	$	500
VOLZ, JAY, 225TH PLACE SE, MAPLE VALLEY WA	$	500
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
CRAWFORD, ROB, 200TH ST E, GRAHAM WA	$	1000
GOODEN, JR., ALLEN, 12TH AVE S #E 202, SEATTLE WA	$	500
GREENTREE COMMUNICATIONS CO, PO BOX, SEQUIM WA	$	50
H D FOWLER CO, PO BOX, BELLEVUE WA	$	500
MUNCE, DERALD, LILA CT, STEILACOOM WA	$	500
PAUL, MICHELLE, 15TH AVE S, SEATLE WA	$	500
PERFORMANCE CONTRACTING INC, W 110TH ST, LENEXA KS	$	500
ROUSE, KERRY, BORDER WAY NE, KINGSTON WA	$	500
SIGNATURE KITCHENS & INTERIORS, SMITH STREET, PORT ORCHARD WA	$	500
Region 4 – Southwest Washington		
AMERICAN AIR & ELECTRICAL, NE 68 ST., VANCOUVER WA	$	500
CROWN FURNACE, PIONEER BLVD., SANDY OR	$	500
FRIEDRICH, DANIEL, PO BOX, OLALLA WA	$	500
HCG BUILDING TECHNOLOGIES INC., STEVENS AVE, SOLANA BEACH CA	$	500
HOOD RIVER PLUMBING & HEATING, 12TH ST, HOOD RIVER OR	$	500
MOUNTAIN VIEW ELECTRIC INC, NW 51ST AVE, RIDGEFIELD WA	$	500
PETROVICH, MATTHEW, PO BOX, SHELTON WA	$	500
SCHMITZ, STEPHEN, PO BOX, VANCOUVER WA	$	500
WYNINGER, RICHARD, PO BOX, HOQUIAM WA	$	500
Region 5 – Central Washington		
ALLIANCE CORPORATION, W. COLUMBIA ST., PASCO WA	$	500
AVILA, JOSE, SPARROW RD., CONNELL WA	$	500
BIG BEARS PLUMBING ROOTER LLC, 71ST ST. NW, GIG HARBOR WA	$	500
DAN'S BACKHOE SERVICE, SWANSON GULCH ROAD, MANSON WA	$	500
DOOR-TECH INC, N. WENATCHEE AVE., WENATCHEE WA	$	500
PREMIER LANDSCAPING/DESIGN INC., PATTYTON LN., RICHLAND WA	$	500

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SIMPSON, ROB, E. MAIN AVE., PUYALLUP WA	$	500
TTC CONSTRUCTION LLC, PO BOX , YAKIMA WA	$	500
Region 6 – Eastern Washington		
AIRE SERV OF SPOKANE, E TRENT AVE, SPOKANE WA	$	250
ALLEN, ARNOLD, W GARLAND, SPOKANE WA	$	500
ANCHOR CONSTRUCTION CO, PO BOX, LOON LAKE WA	$	500
HEMIGHAUS, MARK, BURRELL AVE, LEWISTON ID	$	500
HUFF, CHARLES, 6TH AVE., LEWISTON ID	$	500
J & S IRONWORKS, PO BOX, NINE MILE FALLS WA	$	500
JAMES HENNESSEY CONSTRUCTION, PO BOX, LOON LAKE WA	$	500
NELSON, JAMES, PO BOX , SPOKANE WA	$	500
RH EXCAVATION & PUMP, PO BOX, PRIEST RIVER ID	$	500
RUDEEN DEVELOPMENT LLC, 169TH DRIVE SE #166, MONROE WA	$	500
SKORICK, RON, N.VINCENT RD, NEWMANLAKE WA	$	500
Central Office		
BOOTH AND BURNER CORPORATION, PO BOX, LACEY WA	$	500
CASCADE SIGN & FABRICATION LLC, PLEASANT VALLEY RD, YAKIMA WA	$	1000
CASTLE HEATING & A/C INC., PO BOX, SOUTH PRAIRIE WA	$	500
R & H MECHANICAL INC, PORT DRIVE, BURLINGTON WA	$	1000
ROE, RICK, NE 16TH ST, SAMMAMISH WA	$	1000
Violation – Hiring Uncertified Electricians		
Region 1 – North Puget Sound		
COLEMAN SPAS, , REDMOND WA	$	250
KITCHENS & DESIGN, E. HICKOX ROAD, MT. VERNON WA	$	250
OLD WORLD CONST. RESOURCES LLC, 13TH AVE NW, SEATTLE WA	$	250
REBAR MACHINE SERVICES INC., EMERALD AVE, LAS VEGAS NV	$	250
RELIABLE FLOOR COVERING INC, MAIN STREET, EDMONDS WA	$	250
ROMAN TECHNOLOGIES, INC., GARDEN BROOK DRIVE, FARMERS BRANCK TX	$	250
SERVICE ELECTRIC CO INC., PO BOX, SNOHOMISH WA	$	250
WEST COAST ENTERPRISES, 196TH ST. SW., LYNNWOOD WA	$	250
Region 2 – King County		
AT YOUR SERVICE ELECTRIC, 16TH AV SW, BURIEN WA	$	250
PUGET SOUND ELECTRICAL SERVICE, 4TH AV S, SEATTLE WA	$	250
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
AMBIENT CONTROL CO INC, R ST NW, AUBURN WA	$	250
GREENTREE COMMUNICATIONS CO, PO BOX, SEQUIM WA	$	50
MCKINLEY ELECTRIC INC., ,	$	250
PERFORMANCE CONTRACTING INC, W 110TH ST, LENEXA KS	$	250
PROVIDENT ELECTRIC INC., PO BOX, RENTON WA	$	500
SECURITY ONE INC., 104TH ST CT S, LAKEWOOD WA	$	250
SHAMP ELECTRICAL CONTRACTING, INC., W. 8TH ST., PORT ANGELES WA	$	500
Region 4 – Southwest Washington		
E S & A SIGN & AWNING, OAK PATCH RD., EUGENE OR	$	500
GENESIS HOME TECH INC, SW NIMBUS AVE 4A, BEAVERTON OR	$	250
GODVIN, JOEL, NW 160 CT, BEAVERTON OR	$	1000
HUSER INTEGRATED TECH INC., NW 17TH AVE, PORTLAND OR	$	250
PROTEC INC, NE FLANDERS, PORTLAND OR	$	250
QUALITY ELECTRIC, NE 82ND AVE, VANCOUVER WA	$	500
STATE OF WASHINGTON DEPARTMENT OF CORRECTION, LINDERSON WAY, OLYMPIA WA	$	250
Region 5 – Central Washington		
ALLIANCE CORPORATION, W. COLUMBIA ST., PASCO WA	$	250
DOOR-TECH INC, N. WENATCHEE AVE., WENATCHEE WA	$	250
NEPPLE ELECT & CONTROLS LLC, PENINSULA DRIVE, MOSES LAKE WA	$	250
STEREO FIRST BY BEMIS, S 1 ST ST, YAKIMA WA	$	250
TTC CONSTRUCTION LLC, PO BOX, YAKIMA WA	$	250
Region 6 -		
ADVANCED ELECTRIC & ALARM SYS INC, PO BOX, SPOKANE WA	$	500
ARCTIC LIGHTING & ELECTRIC, E SHARP, SPOKANE WA	$	750
LOWE'S BUILT - IN SYSTEMS INC, E MONTGOMERY, SPOKANE WA	$	500
PRO HEATING & A/C INC, PO BOX, SPOKANE WA	$	250
RUDEEN DEVELOPMENT LLC, 169TH DRIVE SE #166, MONROE WA	$	250
SCHRODER, RAY, E ARCHERY, SPOKANE WA	$	250
Central Office		
CASCADE SIGN & FABRICATION LLC, PLEASANT VALLEY RD, YAKIMA WA	$	100
CERTIFIED SECURITY SYSTEMS/DBA SPOKANE SECURITY SYSTEMS INC., N PINES RD, SPOKANE WA	$	100
GARRETT SIGN CO. INC., HARNEY ST, VANCOUVER WA	$	100
LEIBOLD COMMUNICATIONS INC., ELLIOTT AVE W, SEATTLE WA	$	250
PROVIDENT ELECTRIC INC., PO BOX, RENTON WA		500
WIRE RITE ELECTRIC INC., PO BOX, BATTLE GROUND WA	$	300
Violation – Uncertified Electrician		
Region 1 – North Puget Sound		

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DYER, ROBERT, NE. 95TH ST., REDMOND WA	$	250
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GAULKE, BRENT, NE 12TH ST, BELLEVUE WA	$	250
GREINKE, JEFF, PO BOX, MILL CREEK WA	$	250
MALMBERG, JONATHAN, N.E. 1ST ST, SUITE 201, BELLEVUE WA	$	250
MARCHEWKA, WALDEMAR, 30TH DR SE, BOTHELL WA	$	250
O'NEAL, GREG, EMERALD AVE, LAS VEGAS NV	$	250
PIPER, KEN, E. HICKOX ROAD, MT. VERNON WA	$	250
REINERT, MITCHELL, NE 172ND LN, WOODINVILLE WA	$	250
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TAYLOR, CHARLES, PO BOX, UNION WA	$	250
Region 2 – King County		
BRIMER, CHARLES, S. THOMPSON AVE., TACOMA WA	$	250
COOK, DANIEL, OLD OWEN RD, MONROE WA	$	500
GRINNELL, TOM, OLD OWEN RD, MONROE WA	$	500
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
BROWN, RODNEY, PIKE ST NE, AUBURN WA	$	250
BYRD, DENNIS, DOVE LN NE, OLYMPIA WA	$	250
JOHNSON, PETER, SMITH STREET, PORT ORCHARD WA	$	250
KNEELAND, ROBERT, THUJA AVE.SE, YELM WA	$	250
MACDOWELL, WARREN, PO BOX, SEQIM WA	$	50
MATKINS, KEITH, W SWANEY AVE, PORT HADLOCK WA	$	250
PALMER, CHRIS, PO BOX, SEQUIM WA	$	50
PRATT, DAVE, PO BOX, SEQUIM WA	$	50
STABILE, BILL, ROOSEVELT ST., PORT TOWNSEND WA	$	250
WALKER, TONY, FRESHWATER PARK, PORT ANGELES WA	$	250
YOUNG, TRACY, WEIHL RD, CLE ELLUM WA	$	250
Region 4 – Southwest Washington		
BIGG JR., FRANK, SAINT ANDREWS CRT., OREGON CITY OR	$	250
CLAUSEN, GARRY, LIBERTY ST NE, AURORA OR	$	250
CORNER, JAMES, 22ND AVE NW, SALEM OR	$	250
DUNBAR, SCOTT, NE 42ND ST, VANCOUVER WA	$	250
FRIEDRICH, DANIEL, PO BOX, OLALLA WA	$	250
HILL, VIRGIL, NW 199TH STREET, BATTLE GROUND WA	$	250
MANZURA ELECTRIC, NE 61ST PL, VANCOUVER WA	$	250
ORTWEIN, MICHAEL, PO BOX , JASPER OR	$	250
PETROVICH, MATTHEW, PO BOX , SHELTON WA	$	250
WYNINGER, RICHARD, PO BOX, HOQUIAM WA	$	250
Region 5 – Central Washington		
ALEXANDER, BRADLEY, ASPEN WAY DRIVE, HELENA MT	$	250
AVILA, JOSE, SPARROW RD., CONNELL WA	$	250
BROWN, DALUS, S. 64 TH. AVE., YAKIMA WA	$	250
HENDRICKS, BLAKE, WEST IVY, MOSES LAKE WA	$	250
JEFFERSON, HARRY, MC LAUGHLIN, YAKIMA WA	$	250
LENBERG, DONALD, MIERAS RD, YAKIMA WA	$	250
MATSURMA, RON, S 1 ST ST, YAKIMA WA	$	250
RANSIER III, ROBERT, C STANTON RD, YAKIMA WA	$	250
SIMPSON, ROB, E. MAIN AVE., PUYALLUP WA	$	250
WALKER, LEON, ELLA NE., EAST WENATCHEE WA	$	250
YARBROUGH, GARY, W. HENRY, PASCO WA	$	250
Region 6 – Eastern Washington		
ABERASTURI, RANDY, N CONKLEN, ELK WA	$	500
ALLEN, ARNOLD, W GARLAND, SPOKANE WA	$	250
FOSTER, CLINT, PO BOX, DAVENPORT WA	$	250
HADDORFF, SCOTT, E. 53RD, SPOKANE WA	$	250
HEMIGHAUS, MARK, BURRELL AVE, LEWISTON ID	$	250
HUFF, CHARLES, 6TH AVE., LEWISTON ID	$	250
LABERE, JOHN, PO BOX, NINE MILE FALLS WA	$	250
NEIHART, RYAN, 169TH DRIVE SE #166, MONROE WA	$	250
PHILLIPS, REX, N. ADAMS RD., SPOKANE VALLEY WA	$	250
RICHARDS, DAVID, S MCDONALD, SPOKANE WA	$	250
SCHRODER, RAY, E ARCHERY, SPOKANE WA	$	250
SMELCER, RONALD, N PERRY, SPOKANE WA	$	250
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URIBE, TIM, PO BOX, LOON LAKE WA	$	250
Central Office		
JORDAN, PATRICK, NE 179TH ST # 46, WOODINVILLE WA	$	350
MEARS, FRED, PO BOX, YAKIMA WA	$	100
OLSON, CHADD, N PARK RD, SPOKANE WA	$	250
WADDLES, JOHNNIE, 96TH AVENUE E., EATONVILLE WA	$	250

Violation – No Electrical Work Permit

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Region 1 – North Puget Sound

ABSOLUTE GAS SERVICES, PO BOX, MILL CREEK WA	$	250
ACERO, JORGE, PO BOX, GRANITE FALLS WA	$	250
ANCHOR ELECTRIC, 8TH PL. W., LYNNWOOD WA	$	250
ASSOCIATED HEATING & SHEET METAL INC, PO BOX, MONROE WA	$	2000
AVENUE B HOLDINGS, LLC, PO BOX , SNOHOMISH WA	$	250
BARTLETT ELECTRIC, SANDY HOOK DR., CLINTON WA	$	1000
BENNETT DESIGN PERFORMANCE, PO BOX, MONROE WA	$	250
C & L HOLDINGS, LLC, MERIDIAN, BELLINGHAM WA	$	250
C M HEATING INC, PO BOX, MOUNTLAKE TERRACE WA	$	250
CASCADE FUEL OIL DIST CO, HIAWATHA PL S, SEATTLE WA	$	250
CDM CONSTRUCTORS INC., NE 1ST ST SUITE 201, BELLEVUE WA	$	250
COLEMAN SPAS, , REDMOND WA	$	250
DAVIS, SHIRLEY, NE 151ST ST., LAKE FOREST PARK WA	$	250
EYE ON SECURITY, NE. 95TH AVE. ST., REDMOND WA	$	250
FREDSON, STEVE, 82ND PL. NE, MARYSVILLE WA	$	250
GREENWOOD ELECTRIC INC., PO BOX, SEATTLE WA	$	250
GSB ELECTRIC INC., 80TH AVE.NW, STANWOOD WA	$	250
HAMMER ELECTRIC, 96TH DR SE, SNOHOMISH WA	$	250
HD ELECTRIC, PO BOX, EVERETT WA	$	250
JOHNSON, LARRY, OLD CASCADE HWY, SKYKOMISH WA	$	250
KITCHENS & DESIGN, E. HICKOX ROAD, MT. VERNON WA	$	250
L E A, AURORA AVE. N PMB 6611, SEATTLE WA	$	2000
LIGHTNING ELECTRIC, RATHBONE RD. STE C, FERNDALE WA	$	250
MAJOR ELECTRIC INC., 142ND AVE NE, WOODINVILLE WA	$	250
MCCOMBS LIGHT & ELECTRIC CO., PO BOX, EASTSOUND WA	$	250
MENNE, JAMES, SHELL ST, GREENBANK WA	$	250
MORRISON HOME INNOVATION LLC, 206TH ST SW, LYNNWOOD WA	$	1000
NORTH PARK HEATING INC, BALLINGER WAY NE, SEATTLE WA	$	2000
NORTHWEST ELECTRIC AND SERVICE INC., 29TH ST E, EDGEWOOD WA	$	2000
OLD WORLD CONST. RESOURCES LLC, 13TH AVE NW, SEATTLE WA	$	250
ORCAS ELECTRIC INC, LANGELL LANE, EASTSOUND WA	$	250
P D R ENTERPRISES, INC., PO BOX, EDMONDS WA	$	250
PRECISION ELECTRICAL OF WA INC, PO BOX, BATTLE GROUND WA	$	250
QUALITY ONE LANDSCAPING & IRRIGATION, 209TH AVE SE, MONROE WA	$	250
REBAR MACHINE SERVICES INC., EMERALD AVE, LAS VEGAS NV	$	250
RELIABLE FLOOR COVERING INC, MAIN STREET, EDMONDS WA	$	250
ROMAN TECHNOLOGIES, INC., GARDEN BROOK DRIVE, FARMERS BRANCK TX	$	250
SERVICE ELECTRIC CO INC., PO BOX, SNOHOMISH WA	$	1000
SIVERLING, DAN, 78TH PL SW, EDMONDS WA	$	250
SMITH, MYRON, 267TH DR SE, MONROE WA	$	250
SPENCER, MARK, 69TH AVE NE, MARYSVILLE WA	$	250
WEST COAST ENTERPRISES, 196TH ST. SW., LYNNWOOD WA	$	250

Region 2 – King County

BURIEN NATURAL GAS SERVICE INC., SW 154TH STREET, BURIEN WA	$	1000
COOK, DANIEL, OLD OWEN RD, MONROE WA	$	250
CROWN MOBILE HOMES SET-UP/SVC, RICH ROAD SE, OLYMPIA WA	$	250
DICK'S HEATING & A/C INC., 45TH ST. E, SUMNER WA	$	1000
GLOBAL SCTY & COMM OF WA INC, MAIN ST, VANCOUVER WA	$	1000
GRINNELL, TOM, OLD OWEN RD, MONROE WA	$	250
HARBOR ELECTRIC INC, SHOREWOOD CT, FOX ISLAND WA	$	250
JACK IN THE BOX, A ST SE, AUBURN WA	$	250
KEITHLY ELECTRIC CO, SOUTH DIRECTOR, SEATTLE WA	$	2000
KOZLOV, VASILIY, AVE. S, AUBURN WA	$	250
M C CONSTRUCTION, SW 102ND STEET #71, SEATTLE WA	$	250
R F I COMM & SECURITY SYS, SW 112TH ST, BEAVERTON OR	$	1000
REHABITAT NORTHWEST INC, 16TH AVE SW, SEATTLE WA	$	250
SEATTLE'S BEST WINDOWS, INDUSTRY DR STE 220, SEATTLE WA	$	250
SECURITY ONE INC, 104TH ST. CT S, LAKEWOOD WA	$	250
THE LOCK SHOP, PACIFIC HIGHWAY S, FEDERALWAY WA	$	1000
UNIVERSAL REFRIGERATION INC, PO BOX, AUBURN WA	$	1000

Region 3 – Pierce & Kitsap County & Olympic Peninsula

ABSOLUTE AIR INC, E HWY 101, PT ANGELES WA	$	250
HOLMES, RAY, 52ND AVE W, LAKEWOOD WA	$	250
JENSEN, CARLTON, STATE HWY. 305 N. E., POULSBO WA	$	250
OAK BAY ANIMAL HOSPITAL, OAK BAY RD, PT HADLOCK WA	$	250
PUGET SOUND SERVICES, 44TH AVE SW, SEATTLE WA	$	250
SAME DAY ELECTRIC, 72ND AVE NW, GIG HARBOR WA	$	250
SIGNATURE KITCHENS & INTERIORS, SMITH STREET, PORT ORCHARD WA	$	250
TOOLEY, SAM, ORCHARD ST. S.E., AUBURN WA	$	250
VALLEY ELEC CO OF MTVERNON INC, MERRILL CREEK PARKWAY, EVERETT WA	$	1000
YOUNG, TRACY, WEIHL RD, CLE ELLUM WA	$	250

Region 4 – Southwest Washington

ALOHA ELECTRIC INC, PATTERSON PL., VANCOUVER WA	$	100

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FIVE STAR ELECTRIC, S J ST, TACOMA WA	$	500
HAMER ELECTRIC, INDUSTRIAL WAY, LONGVIEW WA	$	250
HUSER INTEGRATED TECH INC., NW 17TH AVE, PORTLAND OR	$	250
J C ELECTRIC INC, NW 184TH, RIDGEFIELD WA	$	250
KUTSAR, VIKTOR, NE 107TH AVE, VANCOUVER WA	$	250
LANG, MIKE, PO BOX, MONTESANO WA	$	250
MILLENNIUM ELECTRIC, NW 9TH CIRCLE, CAMAS WA	$	2000
MITCHELL, KEITH, NE 212 AVE., BATTLE GROUND WA	$	250
MOUNTAIN VIEW ELECTRIC INC, NW 51ST AVE, RIDGEFIELD WA	$	250
NATTA, JIM, NE 182 AVE, BRUSH PRAIRIE WA	$	250
O'MALLEY, KAREN, PO BOX, VANCOUVER WA	$	250
QUALITY ELECTRIC, NE 82ND AVE, VANCOUVER WA	$	250
R J ASHTON ELECTRIC, PO BOX , VANCOUVER WA	$	1000
SECURITY SIGNS INC, SE HOLGATE BLVD, PORDLAND OR	$	250
STATE OF WASHINGTON DEPARTMENT OF CORRECTION, LINDERSON WAY, OLYMPIA WA	$	250
Region 5 – Central Washington		
ALL-PHASE ELECTRIC, N. 6TH AVE, YAKIMA WA	$	250
AUST CONSTRUCTION & ELECT LLC, W. 15TH PLACE, KENNEWICK WA	$	1000
CABIN CREEK ELECT LLC, PO BOX, EASTON WA	$	250
CENTRAL MECHANICAL SERVICES, PO BOX, YAKIMA WA	$	1000
CLARK ELECTRIC INC., PO BOX, PASCO WA	$	250
INLAND ALARM LLC, AHTANUM ROAD, YAKIMA WA	$	250
KARI-LANE, LLC, PO BOX, SAGINAW AL	$	250
LIBERTY CHRISTIAN SCHOOL, WILLIAMS BLVD., RICHLAND WA	$	250
MICHAELS ELECTRIC, HOISINGTON RD., PROSSER WA	$	500
PREMIER LANDSCAPING/DESIGN INC., PATTYTON LN., RICHLAND WA	$	250
SIMPSON, ROB, E. MAIN AVE., PUYALLUP WA	$	250
STEREO FIRST BY BEMIS, S 1ST ST, YAKIMA WA	$	250
TORRES, EMERITA, JANET ST, PASCO WA	$	250
TTC CONSTRUCTION LLC, PO BOX, YAKIMA WA	$	250
WATTS BROTHERS, PO BOX, PATERSON WA	$	250
Region 6 – Eastern Washington		
A & M QUALITY HEATING INC, E INDIANA AVE, SPOKANE WA	$	250
AIRE SERV OF SPOKANE, E TRENT AVE, SPOKANE WA	$	125
ALLSTATE ELECTRIC INC, 61ST AVE NE #4, ARLINGTON WA	$	1000
DEHAMER, GREGORY, BLACKBERRY, CHENEY WA	$	250
HOLLIDAY HEATING & REFRIG INC., N HELENA, SPOKANE WA	$	250
HUFF, CHARLES, 6TH AVE., LEWISTON ID	$	250
JAMES HENNESSEY CONSTRUCTION, PO BOX, LOON LAKE WA	$	250
LOWES BUILT-IN SYSTEMS INC, E MONTGOMERY, SPOKANE WA	$	500
M CLARK ELECTRICAL LLC, GREGGS RD, NEWPORT WA	$	1000
MCCABE, MARK, S FAIRWAY RIDGE, SPOKANE WA	$	250
RAINBOW ELECTRIC INC., N NAPA, SPOKANE WA	$	2000
STEVE SHERIDAN ELECTRIC, W TEAL AVE, SPOKANE WA	$	250
TRI-PURE WATER RESOURCES, INC., N. ADAMS RD., SPOKANE VALLEY WA	$	250
WYTEK CONTROLS INC., PO BOX, TULATATIN OR	$	250

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 4** **April 2006**

All Electrical Currents Newsletters Now Offered In One Searchable .PDF Document

As requested at the recent stakeholder meetings, we now have a searchable compilation of all 8+ years of the ELECTRICAL CURRENTS newsletter in one Adobe (.PDF) document on our Web site. The document will be updated monthly to include the latest edition and is located at:
http://www.lni.wa.gov/TradesLicensing/Electrical/WhatsNew/Currents.

We recommend that you save a copy of the file to your computer's hard drive after each monthly update for quicker access and faster searches throughout the month. The file is too large to distribute on the Electrical Listserv and not recommended for dial-up users. If you have high-speed Internet access and try this feature out, please give us your feedback at: mailto:electricalprogram@lni.wa.gov.

Revisions To WAC 296-46B Are On Schedule To Be Effective May 1, 2006

The electrical rule revision process that began with the formation of the Technical Advisory Committee (TAC) and acceptance of proposals from the public in July 2005 is ahead of the original schedule. We expect the rules to be effective May 1, 2006. The accelerated process for this revision cycle was possible due to the small number of revisions proposed or needed because of 2005 legislative action. We want our inspectors, customers, and other stakeholders to be aware of the new requirements. Listed below are summaries of the most important revisions. The complete text of the changes is available online on the Rule Development page at:
http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/RuleDev/default.asp.

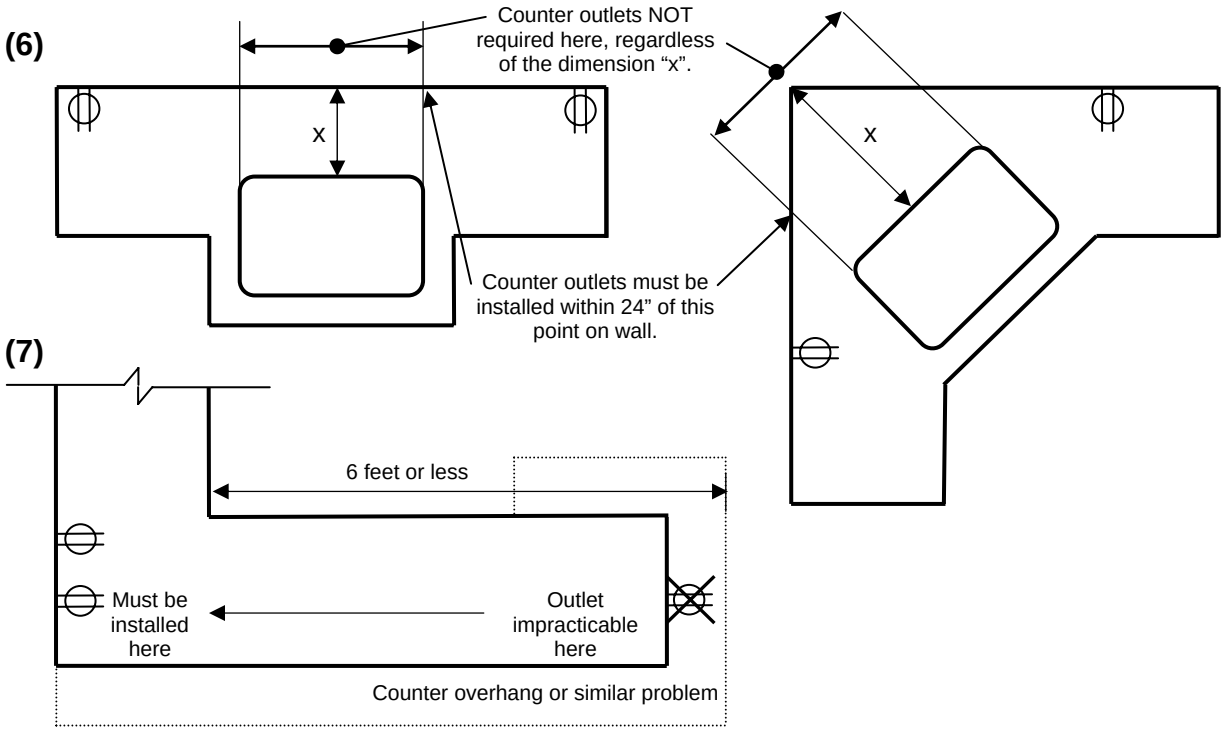
- In **WAC 296-46B-010(1)** The *American Railroad Engineering and Maintenance of Way Association—2005 Communications and Signal Manual* was added the to the list of adopted standards, primarily to address some of the traffic control systems necessary in the construction of public transportation systems such as light rail.
- In **WAC 296-46B-010(16)** language was restructured to clarify the threshold for small modifications to existing installations that do not require plan review. In reference to NEC 517.2 the term "critical branch circuits and feeders" was replaced with "branch circuits or feeders of an essential electrical system."
- In **WAC 296-46B-010(Notes to Tables 010-1 and 010-2)** new language makes it clear that places of assembly located within educational and institutional facilities may NOT be done in the wiring methods the NEC now allows for some assembly spaces (i.e. spaces with a specific finish rating or not required to be of fire-rated construction).
- In **WAC 296-46B-020(7) and (32)** there are now specific definitions for "appliance" and "household appliance" as the terms are used in rule.
- In **WAC 296-46B-020(20)**, selective coordination of overcurrent devices, as defined in NEC 100, shall be determined and documented by a professional engineer registered in Washington under chapter 18.43 RCW.
- In **WAC 296-46B-030(1) and (2)**, "engineering evaluation" is defined and presented as an option to listing, field evaluation, and department review. For the specific industrial control panels and industrial utilization equipment described in this section, engineering evaluation verifies unlisted equipment is manufactured to appropriate electrical safety standards. An accredited professional engineer may inspect equipment or review documents submitted by the equipment owner and manufacturer for compliance with the requirements of WAC 296-46B-030(2)(d). Engineering evaluation will replace department evaluations since L&I will no longer perform similar review of equipment documentation after December 31, 2006.
- **WAC 296-46B-911** has been amended to include an initial filing fee ($516.00) and renewal fee (50% of the initial filing fee) for the three-year accreditation period for engineering evaluation (i.e. an engineer evaluating industrial utilization equipment).

- A **new section WAC 296-46B-997(1-24)** describes the accreditation criteria, equipment evaluation and identification process, and the record keeping requirements for engineering evaluation. The department is developing an online application form and cannot begin accepting applications for accreditation until the May 1, 2006 effective date of the rule.

  (*If you have specific questions not covered in the complete text of the rules for engineering evaluation, accreditation, or fees you may call Dave Myers at 360-902-5967 or Doug Erickson at 360-902-5742 for additional information.*)

- In **WAC 296-46B-210(1)**, the definition of "kitchens in other than dwelling units" has been removed and the new definition in NEC 210.8(B)(2) will now be applied. The old rule specified "work surface for food or beverage preparation", while the NEC now states "*an area with a sink and permanent facilities for food preparation and cooking*."

- In **WAC 296-46B-210(6)** a counter outlet is not required behind a sink or range, no matter what the dimension "x" is in the diagram (6) below. If none is installed, then there must be a receptacle within 24" on either side of the sink or range as indicated in the diagram and NEC Figure 210.52.



- In **WAC 296-46B-210(7)**, if it is impracticable to install the peninsular counter outlet(s) required in the NEC, they may be eliminated so long as the peninsular counter area extends no farther than 6' from the face of the adjoining countertop. Check for approval from your inspector **prior** to relocating the outlets. Any outlet(s) eliminated must be installed in the wall space at the point where the peninsula connects to the wall, in addition to any that would normally be required in that wall space by the NEC. See diagram (7) above.

- **WAC 296-46B-250(6) and (7)** have been deleted. These specific requirements for multiple grounding of systems and circuits of 1 kV and greater have been replaced by new language in NEC 250.184(C).

- In **WAC 296-46B-555(2)**, it has been made clear that transformer terminations, rather than the enclosure, must be located a minimum of 12" above the deck of a dock. There has been no change to the NEC 555.5 requirement that the transformer and enclosure must be specifically approved for the intended location.

- **WAC 296-46B-905(15)(b) and (c)** have been modified in the fee schedule. Class B random inspection is based on the premise that a licensed contractor or certified electrician should never make an error on the simple work designated as Class B. Modification to subsection (15)(b) makes it clear that a reinspection necessary to verify completion of any corrections issued during a Class B random inspection will be charged per ½-hour ($36.40) timed from the inspector's previous inspection stop.

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Making installation errors on Class B work automatically initiates inspection of another label in the block of twenty. Addition of subsection (15)(c) makes it clear that the fee for such an inspection is based per ½-hour ($36.40) timed from the inspector's previous inspection stop.

- **WAC 296-46B-920(1) and (2)** both add language clarifying that the minor plumbing work allowed under the plumbing statute (RCW 18.106.150) for the 01 journeyman or 02 residential specialty electrician includes the like-in-kind replacement of the appliance or any component part of the appliance.
- In **WAC 296-46B-920(2)(f)(v)(C)(new bullet 5)** the scope of work for the HVAC/refrigeration (06A) specialty electrician has expanded to include the installation of "a bonding conductor for metal gas piping to an existing accessible grounding electrode conductor or grounding electrode only when terminations can be made external to electrical panelboards, switchboards, or other distribution equipment."
- In **WAC 296-46B-925(17)** the July 1, 2006 expiration date for the electrical utility telecommunications transition equipment installation, maintenance, and repair exemption has been removed from the text.
- In **WAC 296-46B-960(3)** new language is added to allow all of the electrician exams to consist of multiple sections, the same as previously done for the administrator and master electrician exams. All sections must be successfully completed within a one-year period after beginning the examination. The candidate does not have to retake any sections successfully completed within the one-year period. If all sections are not successfully completed within the one-year period, the candidate must begin a new examination period and retake all sections.
- In **WAC 296-46B-995(11)(b)** a technical correction replaces "served on" with "given to" so the appeal requirement now reads: "The appeal must be filed within twenty days after the notice of the decision or penalty is given to the assessed party either by personal service or by certified mail, return receipt requested, sent to the last known address of the assessed party and shall be made by filing a written notice of appeal with the chief electrical inspector, as secretary to the board."
- The following WAC sections are repealed since their deadlines have expired:
  WAC 296-46B-950—Opportunity for gaining credit for previous work experience gained in certain specialties.
  WAC 296-46B-955—Appliance repair specialty electrician enforcement procedures.

● An Overview Of E1, E2, and E3 Training Certificates—Steps To Certification

You are subject to a citation if you are doing electrical work without having a valid electrician certificate or electrical training certificate in your possession. A contractor and the company's electrical administrator are responsible for ensuring all electrical workers have appropriate and active certification for the work performed. The following steps will guide individuals through obtaining proper certification as they proceed in their required electrical training period:

Step 1: All trainees begin with the E1 training certificate by submitting an *APPLICATION/RENEWAL FOR AN ELECTRICAL TRAINING CERTIFICATE* ($37.10). With E1 certification, a trainee must work under 100% (constant) supervision while doing work in the 3A, 6B, 7A, 7B, 7C, 7D, 7E, and 10 electrical specialty categories. For any work applicable for training credit in the 01, 02, 03, 04, 06, 6A, or 07 scope of work, trainees must be under supervision for at least 75% of the time spent on any jobsite. A current E1 certificate is required to acquire hours of experience towards qualifying for examination, if work is only in the 01, 02, 03, 04, 06, 6A, or 07 scopes. Commercial or industrial new installation experience towards 01 journeyman certification must be obtained under supervision in a ratio of one trainee per journeyman.

Step 2: For 3A, 6B, 7A, 7B, 7C, 7D, 7E, and 10 work, once 720 or 1000 hours of 100% supervised experience is obtained (depending on the specific specialty), a trainee may submit an *APPLICATION FOR AN E2 - 0% SUPERVISION MODIFIED ELECTRICAL TRAINING CERTIFICATE AND SPECIALTY EXAMINATION* ($67.40) to qualify for the exam. The application packet also includes the *AFFIDAVIT OF EXPERIENCE FOR MODIFIED TRAINEE* to document the qualifying experience was obtained under 100% supervision. The licensing staff will send applicants an approval letter or denial letter stating reasons for the denial. An applicant is given one year from the date of the approval letter to successfully complete the examination, or no E2 modified training certificate will be issued.

When we receive notice from LaserGrade that the candidate has passed the examination, we will issue the E2 modified training certificate. E2 certificate holders may work without supervision **only** in the

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specialty indicated on the certificate. The E2 modified training certificate will expire two years from the date it is issued. This gives the E2 trainee two years to complete their remaining 1000 or 1280 hours of unsupervised experience (depending on the specific specialty) for a total of 2000.

Step 3: When the E2 trainee has 2000 hours they may submit an *APPLICATION FOR SPECIALITY ELECTRICIAN CERTIFICATE (Eligibility granted through modified supervision requirements of RCW 19.28.191(1)(g)(ii))* ($75.60) and the associated *AFFIDAVIT FOR MODIFIED TRAINING EXPERIENCE (0% supervision with E2 certificate)*. This affidavit documents the 0% supervision (unsupervised) hours. The time frame for these hours cannot exceed the expiration date of the E2 certificate. When these requirements are verified, the individual is issued the appropriate specialty electrician certification and may continue to work unsupervised for a contractor as well as provide supervision for new trainees.

An E2 trainee that does not complete the 2000 hours within the two-year expiration date of the E2 certificate must apply for an E3 modified supervision training certificate by submitting an *APPLICATION FOR AN E3 - 75% SUPERVISION MODIFIED ELECTRICAL TRAINING CERTIFICATE* ($44.90). This is the appropriate certificate renewal if an E2 certificate expires. An individual holding an E3 training certificate may only use it to work in the specialty designated on the certificate, until they accumulate the total 2000 hours necessary to complete Step 3 above.

Note: If the (3A, 6B, 7A, 7B, 7C, 7D, 7E, and 10) electrical trainee is doing work in another specialty, they must maintain the standard E1 training certificate in addition to either of the modified certificates. Modified training status (E2 and E3) is **always** specialty specific. Although an E1 certificate allows a trainee to work under 75% supervision on each jobsite, it specifically requires 100% (constant) supervision while you are doing work in the 3A, 6B, 7A, 7B, 7C, 7D, 7E, and 10 specialty categories.

● An Identification Plate Is Required When The Service Conductor Ampacity Is Less Than The Equipment Rating.

WAC 296-46B-230(6) states "*If the service conductors have a lesser ampacity than the overcurrent protection or the equipment rating that they terminate in or on, an identification plate showing the ampacity of the conductors must be installed on the service equipment*."

For example: An 800-amp rated bus gutter is installed with two 200-amp service disconnects attached with loads of approximately 180 amps on each disconnect. The total calculated service load being supplied is approximately 360 amps. The NEC allows the service entrance conductors feeding the bus gutter to be sized for the 360-amp calculated load, even though they terminate on equipment rated at 800 amps. In this example, an identification plate is required on the 800-amp bus gutter to give a clear indication to the premises owner, the electrical inspector, and future contractors and electricians that may be working on this system that the ampacity of the service entrance conductors is 360 amps (limited). Clear identification of this design limitation will prevent incorrect assumptions and unsafe future load additions to the service.

The identification plate must be a phenolic or metallic plate or other similar material engraved in block letters at least ¼" (6 mm) high. It must be suitable for the environment in which it's installed. The letters and the background must be in contrasting colors. Screws, rivets, or other equally durable methods must be used to affix an identification plate to the equipment or enclosure. The identification plate must be installed plainly visible on the service enclosure where the ampacity limitation exists.

Note: 120/240-volt, 3-wire, single-phase dwelling services installed per NEC 310.15(B)(6) will not need an identification plate if the conductor ampacity in Table 310.15(B)(6) and the service equipment ratings are the same. Specific occupancies are allowed to use Table 310.15(B)(6) values (i.e. higher ampacity) for the various sizes of copper and aluminum conductors shown in the table. This is based on the unique load diversity in typical dwelling units.

● Electrical Question of the Month

This Month's Question: All device and junction boxes 6" by 6" or smaller for NEC 700 emergency systems and circuits must be _____ in color, both inside and outside.
A) red, **B)** orange, **C)** yellow, **D)** black.

Last Month's Question: When equipment has been recognized as suitable for a specific purpose, function, use, environment, application, and so forth, it is which of the following: **A)** Approved, **B)** Listed, **C)** Identified, **D)** Labeled. The answer is: **C)** [NEC Article 100, Definition: Identified].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 3SE** **March 2006**

SPECIAL EDITION

New Legislation

The legislature recently passed SHB 5841 requiring eight hours of classroom training each year for all electrical trainees. ESB 6225 also passed the legislature. It has significant changes for everyone involved in the well drilling and pumping industry. It simplifies the contractor licensing and specialty electrician requirements. Both bills require rapid changes to the WAC rules to accommodate the statutory changes. Each WAC revision process costs thousands of dollars and a considerable allocation of time by L&I staff and stakeholders. In order to eliminate duplication of costs and time, the process this year will be significantly streamlined.

The Department Is Seeking Stakeholder Input For Proposed Rule Changes

Any stakeholder in the electrical industry may make proposals for additions and/or revisions to the Washington Administrative Code WAC 296-46B – Electrical Safety Standards, Administration, and Installation electrical rules. Proposals, from stakeholders, may be submitted from May 1, 2006 through May 15, 2006. Proposal submission guidelines are detailed below.

Rules are developed to aid both stakeholders and the department in clarification or enforcement of the intent of the electrical statute. Technical changes require evidence of a specific problem and substantiation that the proposal will provide a solution for that problem.

The department is responsible and has final authority for developing all rules. The department will act as the correlating body during the rule development process and may at any time promote rule change as necessary to accommodate statutory change or department policies or procedures.

Proposals For Change

The form shown in this edition must be used to submit rule proposals for the 2006 revision cycle. An electronic fill-in version of the form is available on our website homepage:

http://www.lni.wa.gov/TradesLicensing/Electrical

Industry proposals **must be received from May 1, 2006, through May 15, 2006**. The submitter may submit a proposal(s) by:

- Sending the proposal(s) as an email attachment to ***mailto:TAC2006@lni.wa.gov***; or
- Mailing a compact disc containing the proposal(s) to Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460.

Proposals will not be accepted before or after these dates. **All proposals** to WAC 296-46B **must be made electronically** using the form supplied by the department. All proposals must clearly identify original language as "new text." Proposed revisions should include the relevant existing text and should use the legislative format (i.e. Use underscore (or underlining) to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~)). **Proposals not submitted according to these instructions will be rejected.**

Keep Informed

There will not be a specific mailing list for this WAC process. Special WAC update postings will be maintained using the Electrical Program's *Electrical Listserve,* internet website, and *Electrical Currents* newsletter.

The best way to stay informed of the WAC process and other electrical issues is to join the *Electrical Listserve* at:

http://www.lni.wa.gov/Main/Listservs/Electrical.asp

General Technical Advisory Committee (TAC)

The TAC process has proven to be very valuable in the past several years. The department will again appoint an advisory General TAC made up of experts and interest group representatives to review and make **recommendation** on proposals from the electrical industry.

Persons interested in becoming TAC members must submit a letter of interest for specific positions to the Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460 **to be received no later than May 1, 2006**. The letter should show constituency support for the prospective member. All applications will be evaluated to determine: that the applicant meets the requirements for the position.

The General TAC makeup will be based on an equitable distribution relative to proportion of involvement within the electrical industry in Washington. TAC membership provides an opportunity for everyone interested in the Electrical Program's WAC development to participate in the process.

If necessary, each successful candidate may have an alternate attend the General TAC meeting. There will be no formal alternate assigned by the department. Any TAC member that is absent must notify the Chief Electrical Inspector of the alternate's name one day prior to the General TAC meeting. Failure to make the required notification will result in the position being vacant during the meeting.

Pump Installer/Well Driller TAC Advisory Committee

SSB 6225 requires L&I to have a special TAC meeting with specific members of the pump installer/well driller industry. Discussion will be limited to issues specifically related to implementing SSB 6225.

The TAC – Process

The TAC will make recommendations on industry proposals and identify proposals that may have an economic impact on other specialties, small businesses, construction costs, or the cost of enforcement. TAC representatives must have decision-making authority at the committee meeting. Members who know they will be absent from a TAC meeting should make every effort to send an alternate. The TAC must review and evaluate proposals based on the need:

- To address a critical life/safety need;
- To address a specific state policy/statute;
- To maintain a fair competitive environment;
- To address a unique character of the State; or
- To correct errors and omissions.

The TAC will operate on a majority basis. A majority vote in support of a motion, of members in attendance, will be considered as significant support for the motion made on a specific proposal. The TAC can propose amended language to a proposal. All TAC members share an equal vote. The department will consider all TAC recommendations.

2006 WAC Revision Process – Proposed Sequence Of Events

- **April 2006** – File CR 101 – pre-proposal statement of inquiry
- **May 1, 2006** – Call for proposals from stakeholders to: amend or add to the existing WAC
- **May 15, 2006** – Close proposal period
- **June 7, 2006** – General TAC meeting, Tukwila L&I office
- **June 8, 2006** – Pump Installer/Well Driller TAC meeting, Tukwila L&I office
- **August 2006** – File CR 102 –rule filing (opens the official required public comment period)
- **September 2006** – Public hearing(s)
- **October 2006** – File CR 103 – rulemaking order (adoption)
- **November 2006** – Effective rule

General TAC – Membership

Chairperson– Chief Electrical Inspector (non voting)

1	Consumer	1	WA Manufacturing Business
1	Training School	1	JATC
1	Continuing Education Provider	1	Electrical Engineer
1	Electrical Manufacturer Representative	1	Electrical Testing Laboratory
1	L&I Inspection Supervisor	1	L&I Inspector
1	City Regulator	1	Electrical Utility
1	Telecommunications Utility	8	01 Contractor

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1	02 Residential Contractor	2	06 Specialty Contractor
2	06A Specialty Contractor	1	09 Telecommunications Contractor
11	01 Journeyman Electrician	1	02 Specialty Electrician
2	06 Specialty Electrician	2	06A Specialty Electrician
1	AD HOC Specialty Contractor	1	07 Nonresidential Maint. Electrician
1	Plumber	1	AD HOC Specialty Electrician
1	Plumbing Contractor	1	07 Nonresidential Maint. Contractor

Total membership is 49 plus the Chairperson

Notes:

- All 49 positions are voting members.
- Contractor positions must be filled by a licensed electrical/telecommunications contractor or representative of an electrical contractor's association in Washington representing that specialty.
- Electrician positions must be filled by a certified electrician.
- The AD HOC contractor and specialty electrician positions must be filled by a specialty not represented on the TAC.
- The plumbing contractor position must be filled by a registered general or plumbing contractor or a representative of a plumber contractor's association in Washington.
- The plumber position must be filled by a certified plumber.

License Type	# of Contractors	% of Specialties	TAC Members	# of Electricians	% of Specialties	TAC Members
1	2,451		8	15,141		11
2	291	12%	1	1,896	19%	1
3	37	1%	0	91	1%	0
03A	30	1%	0	75	1%	0
4	89	4%	0	259	3%	0
6	520	21%	2	2,207	22%	2
06A	808	33%	2	3,606	36%	2
06B	13	1%	0	16	0%	0
7	112	5%	1	1,185	12%	1
07A	14	1%	0	60	1%	0
07B	98	4%	0	415	4%	0
07C	2	0%	0	12	0%	0
07D	23	1%	0	53	1%	0
07E	5	0%	0	168	2%	0
9	408	16%	1			
10	24	1%	0	42	0%	0
AD HOC specialty			1			1
Total Specialties	**2,474**			**10,085**		
JW Multiplier	**0.99**			**1.50**		
Total	**4,925**		**16**	**25,226**		**18**

Notes for specialties: <5% = 0 members
5 to 19.9% = 1 member
20 to 39.9% = 2 members
>40% = 3 members
Ad Hoc specialty can be any unrepresented specialty

Notes for 01 Journeyman electrician: 01 members = # of total specialties times the JW multiplier
JW multiplier = # of 01 divided by the # of specialties

General Note: Unfilled positions will remain vacant

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PROPOSAL FORM for 2006 WAC 296-46B Rule Changes

Mail CD to:

Chief Electrical Inspector
Department of Labor and Industries
Electrical Section
PO Box 44460
Olympia, WA 98504-4460

Email to: ***mailto:TAC2006@lni.wa.gov***

FOR L&I USE ONLY

Specific Rule #:

Date Received:

NOTES:

1. All proposals must be **received from May 1, 2006 through May 15, 2006**.
2. Limit each proposal to a single rule section. Use a separate copy for each proposal.

Date submitted: _____ **Name:** _____

Representing: _____ **Telephone:** _____

Mailing Address: _____

Email Address: _____

1. Proposal: *Include new or revised wording, or identification of wording to be deleted. Proposed text should be in legislative format. Use underscore to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~).*

2. Statement of Problem & Substantiation for Proposal: *Note: State the problem that will be resolved by your proposal and substantiation for your proposal.*

3. Check one: ☐ This proposal is original material ☐ This proposal is not original material

Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 3** **March 2006**

● LAST CHANCE! "Grandfathering" Experience For Appliance Repair (07D) Certification—Application Deadline Is June 30, 2006

The final opportunity ends on June 30, 2006 for appliance repair experience (obtained without possessing a training certificate or working under the supervision of a certified 07D appliance repair specialty electrician) to be "grandfathered" to qualify for the 07D appliance repair specialty electrician certification examination.

Applications are available on the "Forms and Publications" page of our Web site and accepted if the individual submits all of the following:

- An OPEN WINDOW OPPORTUNITY APPLICATION FOR APPLIANCE REPAIR SPECIALTY ELECTRICIAN TEMPORARY PERMIT AND EXAMINATION (Valid as allowed and described in WAC 296-46B-940(28)). The fee is $99.00. ($23.90 is nonrefundable after the application for the original specialty electrician certificate is submitted.) ($52.70 is nonrefundable after the temporary permit is issued.) A separate $50.00 fee for the examination is paid directly to the exam contractor when scheduling the examination.
- A notarized verification letter from the individual's employer(s) documenting:
  - The work was in the appliance repair specialty scope of work [as described in WAC 296-46B-920(2)(k)]. The employer must have been in the business of appliance repair work during the entire verification period and must establish legal business status during this time with copies of their business license or RCW 18.27 contractor registration. Sole proprietors with one year (2,000 hours) of the above business documentation and experience may verify their own experience;
  - The specific date time period for which credit is being sought; and
  - The number of previous work experience hours for which credit is being sought. (Coincidental experience previously claimed in another specialty for the same time period, will not be allowed.)

Individuals credited with the minimum 2,000 hours of previous work experience will be eligible for a temporary specialty electrician permit for the purposes of working without supervision and for supervising trainees in the appliance repair specialty. **The temporary permit will be valid for a period of 12 months** or until the individual has passed the appliance repair examination, whichever comes first. If the individual does not successfully complete the exam in the 12-month period, they must obtain a training certificate and work under supervision to continue performing appliance repair.

● Electrician, Master Electrician, and Administrator Exams Will Be Revised

April 10, 2006 is the implementation date for electrical exams based on the 2005 NEC. From a candidate's standpoint, this should not affect your exam preparations. All exam questions are based on basic safety, Code, and theory fundamentals. These rarely change with a new NEC edition. Most changes in the exam are reference updates. Very few questions have been changed because of a Code update.

On April 10th, the journeyman and specialty electrician exams will be divided into separate sections, similar to the master electrician and administrator exams. WAC and RCW questions will be in one section, Code and theory will be in another section. Total time allowed for the complete exams (both sections) will remain the same as it is now for the single-part exam. Both sections must be taken on your original examination. If you pass one section and fail the other, you will be allowed to reschedule the failed section. You will have 12 months from your initial exam date to complete both sections, or you will be required to re-take both parts and begin a new 12-month cycle. For all exams the total exam questions will remain similar to the current number asked.

Separating the state laws and rules material from the basic Code and theory material will allow an unsuccessful exam candidate to focus their studies on the specific areas where they are weak. This new structure will also make it easier for the department to pursue further sharing of examinations with the other states involved in our reciprocal electrical licensing agreements.

● Requirements For Contractor Installing Service Laterals/Drops For Developers Or Utilities

In the April 2004 Electrical Currents, we printed an article under this same title. We stated, *"RCW 19.28.091(1) provides for exemption from the permitting, inspection, licensing, and certification requirements for service lateral installations only if the entity doing the work is employed by the electrical utility. The firm/contractor and utility must have a contract in place (not implied) prior to performing the installation of the underground conduit or conductors."* Recent questions from inspectors and contractors shows a need for clarification of that article.

The contract referred to in the previous article is not necessarily a typical business contract. To be exempt from the licensing, certification and permitting laws, the utility must either own or control the installation while it is being made and operated. The utility may establish ownership and/or control in several ways.

A typical utility to subcontractor relationship may be established using a formal contract. Control may be established with a written agreement. Control may be established by the formalized design and installation requirements published by the utility (e.g. design & installation requirements and required inspection oversight). If the agreement between the utility and developer meets any of these requirements and is in place prior to beginning the work, the developer and/or the developer's sub-contractor may install the lateral without having an electrical contractor's license, certified electricians, or electrical permit. In this case, the developer is acting as the utility's subcontractor as allowed in RCW 19.28.010(1) and 19.28.091(1) as long as the work is ahead of the utility's service point and the work is restricted to utility distribution and transmission work described in NEC 90.2(b)(5) – 1981 version.

If the developer does not have such a contract or agreement with the utility there is no exemption; the entity making the installation must: be a licensed electrical contractor, use certified electricians, and obtain a permit and inspection. It is the responsibility of each installer to determine if they are working in an exempt situation.

Even if the lateral is exempt, the riser portion of all underground conduit runs attached to any structure must either be installed by the owner (as allowed in the owner exemption) or a licensed electrical contractor using certified electricians. The riser also requires permitting and inspection.

● GFCI and AFCI Requirements In Studio Apartments

The requirements for GFCI protection for personnel are found in NEC 210.8. Studio apartment receptacles must comply with 210.8(A). There are no exceptions to the bathroom GFCI requirement. For example, if a washing machine is located in the bathroom, the 15-amp or 20 amp 125 volt receptacle that is required to be supplied from the laundry branch circuit must be GFCI protected. GFCI protection is also required in kitchens where receptacles are installed to serve the countertop surfaces. Receptacles that are within six feet of the outside edge of any sink shall be protected also.

NEC 210.12(B) says: "*All 120-volt, single phase, 15-and 20-ampere branch circuits supplying outlets installed in dwelling unit bedrooms shall be protected by a listed arc-fault circuit interrupter, combination type installed to provide protection of the branch circuit."* The dictionary defines "bedroom" as "a room intended for sleeping." In a studio apartment, the living area and sleeping area is one room and NEC 210.12(B) must be followed. All outlet (see NEC 100 for definition) circuits in the shared living/bedroom must be protected by an AFCI. If any other area shares the studio's bedroom area (e.g. kitchen, dining area, etc.), then all outlet circuits in the shared area must also be AFCI protected.

There is no prohibition against using AFCI protection on other circuits or in locations other than bedrooms.

● Plan Review Requirements For School Work

Specific requirements should be addressed when deciding to undertake the project of performing electrical installations on schools. WAC 296-46B-010 (14)(a) states that an "***Educational facility*** *refers to a building or portion of a building used primarily for educational purposes by six or more persons at one time for twelve hours per week or four hours in any one day. Educational occupancy includes: Schools (preschool through grade twelve), colleges, academies, universities, and trade schools".*

You must refer to WAC 296-46B-010(16) to determine if formal plan review is required for electrical work done in an educational occupancy. Some projects that would **not require** plan review are: low voltage

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systems; energy conservation lighting projects that result in an electrical load reduction on each feeder involved; or a stand-alone utility-fed service not exceeding 250 volts and 400 amps that does not include an emergency system (other than battery back-up unit equipment) or a required fire pump system.

When review is required, the electrical plan should be submitted for review and approval before any electrical work is begun. The electrical plan must be submitted for plan review prior to requesting any electrical inspection. If a plan is rejected during the plan review process, no electrical inspection(s) may proceed until the plan is resubmitted and a conditional acceptance is granted. Once the submitted plan has been approved, the approved plan set must be available on the job site for use by the electrical inspector. If the approved plan requires changes from the conditionally accepted plan, alterations to the project may be required to make the project comply with the approved plan. If changes occur to the project during its construction so it no longer complies with the approved plans, the electrical modifications must be resubmitted to plan review for approval.

All electrical plans for educational facilities must be prepared by, or under the direction of, a consulting engineer registered under chapter 18.43 RCW, and chapters 246-320, 180-29, and 388-97 WAC and stamped with the engineer's mark and signature.

Plans to be reviewed by the department must be legible, identify the name and classification of the facility, clearly indicate the scope and nature of the installation and the person, or firm responsible for the electrical plans. The plans must clearly show the electrical installation or alteration in floor plan view, include switchboard and/or panelboard schedules and when a service or feeder is to be installed or altered, must include a riser diagram, load calculation, fault current calculation and interrupting rating of equipment. Where existing electrical systems are to supply additional loads, the plans must include documentation that proves adequate capacity and ratings. The plans must be submitted with a plan review submittal form available from the department. Plan review fees are not required to be paid until the review is completed. Plans will not be returned until all fees are paid.

● Requirements For The Independent Power Producer Exemption

An Independent Power Producer (IPP) generates power that is purchased by an electric utility at wholesale prices. The utility then resells this power to end-use customers. Although IPPs generate power, they are generally not franchised utilities or government agencies. IPPs usually do not own transmission lines to transmit the power that they generate. Electrical utilities are beginning new programs to purchase electrical power from independent power producers (IPP). Two popular alternate sources of electricity are solar photovoltaic systems and wind generation.

Some of the requirements for an IPP to be exempt from having an electrical contractor's license to work on electrical equipment are:

- The electrical power generated by the facility is not used for self generation or any other on- or off-site function other than sale to one or more utilities.
- The entity has entered into an agreement to sell electricity to a utility or to a third party and the electrical equipment is used to transmit electricity from the terminals of an electrical generating unit located on premises to the point of interconnection with a utility system.
- The electrical equipment is used to transmit electricity to a utility or to a third party;
- The electrical power production facility exceeds 115 KVA.

RCW 19.28.091(2)(c) and WAC 296-46B-925(18) allow independent power producers exemption when they meet specific criteria. Each IPP must make application to the Chief Electrical Inspector, prior to beginning the project, to be recognized as an IPP exempted from the requirements of the RCW 19.28 and WAC 296-46B. Failure to do so may result in non-compliance citations and civil penalties. Installation of alternate power sources constructed for standby or supplemental onsite use by a utility customer must comply with all requirements set forth in RCW 19.28 and WAC 296-46B for permitting, inspections, licensing, and worker certification.

● Requirements For PVC Expansion Joints

Like all construction materials, rigid nonmetallic conduit will expand or contract with variations in temperatures. Per degree change in temperature, rigid non-metallic conduit exhibits a considerably greater change in length than metal conduit systems. NEC 352.44 requires that expansion fittings *"shall be provided to compensate for thermal expansion and contraction where the length change, in*

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accordance with Table 352.44(A) or Table 352.44(B), is expected to be greater than 6mm (¼ in.) or greater in a straight run installed between securely mounted items such as boxes, cabinets, elbows, or other conduit terminations." Conduit manufacturers may also require that up to 30 degrees temperature change be added when the installation is made in an area exposed to direct sunlight.

Example: A 10-foot straight length of conduit is installed between two junction boxes; the geographical area reaches a low temperature of 20ºF in the Winter and a high of 90ºF in the Summer; the conduit run is on the south side of the building and exposed to direct sunlight. The proper calculation is as follows:

Summer high (90ºF) minus winter low (20ºF) is a difference of 70 degrees. Since the conduit is exposed to direct sunlight, add an additional 30 degrees for radiant heating effects. The result is a 100 degree total temperature differential. Table 352.44(A) indicates a 100-foot run of conduit will change 4.06 in. The 10-foot length is 10% of the 100-ft. length found in the table. Therefore it will change 10% of 4.06 in. or 0.406 in. Since this length change is greater than 0.25 in. an expansion fitting is required.

Most manufacturers maximum travel range of rigid nonmetallic conduit expansion fittings is 4 to 8 inches, depending on conduit diameter. At the time of installation consideration must be given to the current ambient temperature (to ensure adequate contraction as well as expansion travel in the fitting) and to securing the conduit with a method that will allow it to move. You must follow the manufacturer's installation instructions.

● Correction – Penalty Amounts Incorrect

In preparing the violator list for the February 2006 Electrical Currents, L&I had a computer reporting problem. Several entities were shown having higher penalty amounts than what were issued. The following are the correct penalty amounts.

	Incorrect amount	Correct Amount
Violation – No Electrical Contractor's License		
Brandt	$1,000	$500
Indoor Air Solutions	$1,000	$500
Cozy Air	$3,000	$1,500
Violation – Hiring Uncertified Electricians		
Brandt	$500	$250
Elite Lighting and Electrical	$200	$100
Bruce Smith Heating and Cooling Inc.	$600	$300
Violation – Uncertified Electrician		
Thomas Kunaschk	$600	$300
Timothy Rowlands	$600	$300
Violation – No Electrical Work Permit		
Brandt	$500	$250
Floral Mollgaard	$500	$250
Jerry Trussell	$500	$250
Quality One Landscaping and Irrigation	$500	$250
Pyramid Electric Inc.	$1,250	$250
Merit Mechanical	$4,000	$2,000
Masterwire	$4,000	$2,000

● Electrical Question of the Month

This Month's Question: Masts that extend through the roof to support overhead service, feeder or branch circuit drops consisting of conductors not larger than 1 AWG aluminum or 3 AWG copper are required to be minimum size: **A)** 2-inch, or larger, Rigid Steel Galvanized Conduit (RMC), **B)** 2-inch Intermediate Metal Conduit (IMC), **C)** 3-inch Electrical Metallic Tubing (EMT), **D)** 1¼" Rigid Steel Galvanized Conduit (RMC)

Last Month's Question: When equipment has been recognized as suitable for a specific purpose, function, use, environment, application, and so forth, it is which of the following: **A)** Approved, **B)** Listed, **C)** Identified, **D)** Labeled. The answer is: **C)** [NEC 100 Definitions]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 2** **February 2006**

Three Positions Open On Electrical Board

There are currently three board positions vacant or up for re-appointment in July 2006. The positions include: electrician, general public, and telecommunication provider. Applications must be received, by the Governor, no later than March 15, 2006. The Governor is interested in improving ethnic, gender and geographic balance on the Electrical Board. Applications must be made using the *Application for Gubernatorial Appointment to a Board or Commission* form. Requests for copies of the application and any questions may be directed to Christina Pourarien at (360) 902-5259 or downloaded at:

http://www.governor.wa.gov/boards/default.asp

Applicants should submit a letter of interest, completed application form, current resume, and letters of recommendation to the Governor's office (Office of the Governor, Attn: Shana Melanson, PO Box 40002, Olympia, WA 98504-0002) by March 15, 2006.

Electrical Contractor Survey

Thanks to everyone who took the time to respond to the recent survey sent to 4,195 electrical contractors across Washington. Twenty-seven percent (1,115) of the contractors surveyed responded. Thanks to everyone who took the time to provide us with their thoughts. We value your input and will use it to make the Electrical Program better able to serve our customers. The survey was intended to help L&I identify electrical contractors' primary needs and concerns.

In general, contractors indicated a strong satisfaction with the overall services currently provided by the Electrical Program. The contractors who responded listed three items that are of most concern.

By far, the most significant need is for L&I to respond to inspection requests as soon as possible, preferably within 24 hours after receiving a request. Contractors indicated that they incur substantial costs when inspections are delayed.

Other issues that stood out in the survey's results were:

- Ensuring consistency, fairness, and professionalism among inspectors; and
- Improving on L&I's efforts in combating fraud (i.e. the underground economy and helping to ensure a level competitive playing field).

The Electrical Program will use all the survey results to help in setting program policy and direction in the future. The program will continue its emphasis on providing 24 hour turnaround for inspection requests. L&I is currently requesting eight additional inspectors to help us respond faster to inspection requests. Efforts will also continue in improving the consistency, fairness, and professionalism of our inspectors and in combating fraud. The Electrical-CORE team is now in place and is seeking out violators of electrical licensing and permitting laws.

Fire Alarm Systems

Some building officials are now allowing the fire detection devices required in residential occupancies to be a part of a centralized alarm system (i.e. security and fire) that has battery backup. When this is allowed, the normally installed 120 volt w/independent battery back-up smoke detectors are usually not installed. If centralized fire detection devices are used as a part of any other system, the circuiting for those detectors must meet the requirements of WAC 296-46B-760 and NEC 760 for power-limited fire alarm circuits.

WAC 296-46B-760 requires all boxes in a fire alarm circuit to be painted red. When a limited energy installation heat or smoke detector circuit is installed in lieu of line voltage smoke detectors, the red paint identifies the fire alarm circuits from other systems. The red paint is only necessary for those boxes installed for the fire or smoke alarm system circuits. Any other limited energy circuit (security, etc.) boxes

do not require identification with red paint. NEC 760.26, .55, and .56 place specific requirements on other systems (power, security, etc.) allowed in these dedicated fire or smoke alarm system boxes.

Junction boxes for traditional line voltage smoke detectors (with battery back-up) have no special circuit separation or painting requirements, since the functionality is in the device, not the circuit. Other circuits can be in the in the junction box that supplies a line voltage smoke detector.

● Grounding Requirements for Feeders Between Structures

National Electrical Code (NEC) 250.32(B)(1) and (2) are unclear. Subsection(1) requires that an equipment grounding conductor be run with the feeder supply conductors to a separate building/structure and says that a grounded circuit conductor (neutral) cannot be connected to the equipment grounding system at the separate building/structure. Subsection (2) appears to contradict the requirements in subsection (1) by not requiring an equipment grounding conductor to be installed and by also allowing the neutral to be connected to the equipment grounding system at the separate building/structure.

WAC 296-46B-250(2) takes precedent over the requirements in NEC 250.32(B) (1) and (2) for grounding a separate building/structure. The WAC says, "*Effective August 1, 2003, an equipment grounding conductor must be installed with the circuit conductors between buildings and/or structures. A grounded conductor (i.e., neutral) is not permitted to be used in place of a separate equipment grounding conductor between buildings and/or structures.*"

An equipment grounding conductor must be installed with the circuit conductors between buildings and the neutral cannot be grounded to the equipment grounding system at the additional building/structure. This ensures that no stray neutral conductor current is placed on the equipment grounding system or runs through the earth. The equipment grounding system is not designed to carry any portion of the circuit current.

In addition, NEC 250.32(A) requires a complete grounding electrode system at each building supplied by a feeder. The only exception is where a single branch circuit supplies the building/structure and the branch circuit includes an equipment grounding conductor.

● Can One Water Well, Septic, Or Other System Be Used To Supply Two Dwellings?

The NEC does not prohibit the sharing of plumbing or other mechanical systems between dwellings. However, it does have specific requirements for the electrical circuits providing power to those systems. The basic requirements of NEC 210.25 have been in place since the 1980's.

NEC 210.25 says, *"Branch circuits in dwelling units shall supply only loads within that dwelling unit or loads associated only with that dwelling unit…"* In the case of two or more dwelling units sharing a common well, septic, or other mechanical system, the electrical supply to these systems cannot come from any of the individual dwelling units. The system must be supplied from a separate source of power, not from one of the dwellings.

● Electrical Work Permits

A single entity purchasing electrical work permits may include all the electrical work being done on a single job site in one electrical work permit (e.g. temporary service, building service, feeders, swimming pool, septic, etc.).

The rules require that "each entity" responsible for electrical work must obtain a permit for their own work. For example, an 01-General electrical contractor installing a building service/circuits and an 06A-HVAC/R electrical contractor installing HVAC/R low voltage controls must obtain separate permits under their individual business' name(i.e. 01-General permits the service/circuits, the 06A-HVAC/R permits the low voltage controls). If the description of work on an electrical permit is expanded to cover the work of another contractor or individual, the permit purchaser will be held responsible for the work, good or bad.

● Electrical Question of the Month

This Month's Question: When equipment has been recognized as suitable for a specific purpose, function, use, environment, application, and so forth, it is which of the following: **A)** Approved, **B)** Listed, **C)** Identified, **D)** Labeled.

Last Month's Question: The minimum ampacity for circuit conductors supplying a varying duty pump motor with a 30 minute duty rating shall be sized based on what percentage of the motor nameplate

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current? **A)** 150%, **B)** 125%, **C)** 115%, **D)** 100%. The answer is: **A)** [Table 430-22(E) Duty-Cycle Service]

Final Judgments of Electrical Laws
For the 4th Quarter of 2005

Violator	Penalty
Violation – No Electrical Contractor's License	
Region 1 – North Puget Sound	
A BRITE IDEA, UNION CITY BLVD, UNION CITY CA	$ 500
BECK, DARRIN, PICNIC POINT, REDMOND WA	$ 1,500
BRANTNER, JESS, GOLD CK LP RD, CARLTON WA	$ 500
CAP CONSTRUCTION, 6TH AVE SE, EVERETT WA	$ 500
CORVUS, PARKRIDGE RD, BELLINGHAM WA	$ 500
CREATIVE TILE AND MARBLE, 382ND AVE SE, SNOQUALMIE WA	$ 450
DEPENDABLE HEATING & A/C SERVICE, EVERGREEN WAY, EVERETT WA	$ 500
DON NELSEN CONSTRUCTION, DAVIES RD, LAKE STEVENS WA	$ 500
FANCY SIGN .COM, PACIFIC HWY S, FEDERAL WAY WA	$ 500
GRIPP, PAUL, S 4TH AVE, EVERETT WA	$ 500
J CAT CONSTRUCTION, LOVES HILL DR, SULTAN WA	$ 500
JOHN F BROWN CONSTRUCTION INC, 202 ST SE, BOTHELL WA	$ 500
KOEPPEN, KENNETH DUBUQUE RD, SNOHOMISH WA	$ 500
LAZANO, JOHN, WAUGH RD, MOUNT VERNON WA	$ 500
LEMKE, HOWARD, DEER PARK LANE, MOUNT VERNON WA	$ 500
MARTEL WELL DRILLING, PO BOX, FRIDAY HARBOR WA	$ 500
NORTHWEST ENERGY SERVICE, 44TH AVE S, MOUNTLAKE TERRACE WA	$ 1,500
RAMSDELL, MICHAEL, PO BOX, FRIDAY HARBOR WA	$ 500
RAMSTEAD, BOOTH, 99TH AVE SE LAKE STEVENS WA	$ 500
SIMONSON, JEFFREY, NE 12TH CT, BELLEVUE WA	$ 500
SMITH, JAMES, HWY 9, MOUNT VERNON WA	$ 500
STOUT, STEVEN, BLUEBERRY LANE, MONROE WA	$ 500
T & T SCHUBERT CONSTRUCTION, PO BOX, GOLD BAR WA	$ 500
TOTAL COMFORT, 147TH ST SE, MONROE WA	$ 500
WEBER, MARK, NE 78TH ST, SEATTLE WA	$ 450
WHITE, BRYCE, BOX 146, GOLD BAR WA	$ 500
Region 2 – King County	
ABDON, FELIX, 47TH AVE E, FIFE WA	$ 500
ALL AROUND HANDYMAN & CLEANING, PO BOX, SEATTLE WA	$ 1,500
ALTA SERVICES INC, 432ND AVE SE, NORTH BEND WA	$ 500
COLUMBIA HEATING, SE 258TH, KENT WA	$ 500
DUANE CAMERON BULLDOZING CO INC, PO BOX, ENUMCLAW WA	$ 500
FEDERAL WAY SIGN, S 341ST PL, FEDERAL WAY WA	$ 500
GOODGUY'S HEATING & COOLING 33RD AVE S, SEATTLE WA	$ 500
HANDYMAN TEAM PRO CORPORATION, 231ST AVE SE, SAMMAMISH WA	$ 500
IRONFIRE DESIGN & FABRICATION, NE 126TH PL, KIRKLAND WA	$ 500
JOHNSON, JOSEPH, 8TH AVE SW, SEATTLE WA	$ 500
LEACH, JOE, MCKEAN CT, ENUMCLAW WA	$ 500
M C CONSTRUCTION, SW 102ND STREET, SEATTLE WA	$ 500
MARSHALL, STEVEN, E 61ST ST, TACOMA WA	$ 500
O'BRIEN HANDYMAN SERVICES, 96TH AVE W, EDMONDS WA	$ 500
PARKER ELECTRIC, SW SPOKANE ST, SEATTLE WA	$ 9,000
PRO APPLIANCE INC, 144TH AVE NE, WOODINVILLE WA	$ 500
SEATTLE'S BEST WINDOWS, INDUSTRY DR, SEATTLE WA	$ 500
SERVICE STEEL CO, PO BOX, KENT WA	$ 500
SHAMROCK LANDSCAPING LLC, 148TH AVE SE, RENTON WA	$ 500
SHIRK, MONTY	$ 500
VAUGHN, ERIC, SE 21ST PL, SAMMAMISH WA	$ 500
Region 3 – Pierce & Kitsap County & Olympic Peninsula	
COURT, THOMAS, 4TH AVE NW, PUYALLUP WA	$ 500
COURTS, LENNY, 19TH AVE E, TACOMA WA	$ 500
ECONOMY SHEET METAL AND HEATING, SR 303 NE, BREMERTON WA	$ 1,000
GALLA CONSTRUCTION INC, MUIRKIRK LN SW, PORT ORCHARD WA	$ 500
GILLARD, MICHAEL, 97TH AVE NW, GIG HARBOR WA	$ 500
LOFALL WELL DRILLING, NW LOFALL RD, POULSBO WA	$ 500
LOVETT, CLYDE, CALHOUN ST, PT TOWNSEND WA	$ 500
M D R CONSTRUCTION, SE AZTEC CT, PORT ORCHARD WA	$ 500
NORTHWEST COMMERCIAL SERVICE, PO BOX, RENTON WA	$ 500
RON HEMLEY SEPTIC INSTS INC, PO BOX, BURLEY WA	$ 1,000
SPENCE, ROBERT, BERTHA, BREMERTON WA	$ 1,500

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Region 4 – Southwest Washington

ADAMS, KEITH, WEST LOCUST AVE, CENTRALIA WA	$	500
AFFORDABLE CONSTRUCTION INC, HILLCREST AVE, .LONGVIEW WA	$	500
ANAPA CONSTRUCTION INC, NE 304TH AVE, WASHOUGAL WA	$	500
ARTICO LITE, SE POWELL BLVD, PORTLAND OR	$	500
BRANDT, WEST LITTLE YORK, HOUSTON TX	$	1000
HOMESTEAD BUILDERS, PO BOX, GRAPEVIEW WA	$	1000
HOPKINS, JAMES, BOX, WINDERMERE BC	$	500
HUSTON, JACK, SE ARCADIA RD, SHELTON WA	$	500
KITCHEN, JAMES, PO BOX, RAINIER WA	$	500
MCGEHEE, CHARLES, NE 143RD AVE, VANCOUVER WA	$	500
MILLENNIUM HVAC INC, NE 135TH ST, VANCOUVER WA	$	500
MURPHY, JOHN MICHAEL, NE 7TH ST, VANCOUVER WA	$	500
NORTHWEST SONY ONLY, NW GLISAN, PORTLAND OR	$	500
PREWIRES UNLIMITED INC, 45 AVE NE, SALEM WA	$	500
RICKY POOLS & SPAS INC, NW 20TH AVE, VANCOUVER WA	$	500
SCHNEIDER HOMES INC, SOUTHCENTER BLVD, TUKWILA WA	$	500
SHEKINAH CONSTRUCTION & HVAC, NE 28TH ST, VANCOUVER WA	$	500
TRADEMARK ELECTRIC LLC, SE WILLOW ST, MILWAUKEE OR	$	500

Region 5 – Central Washington

A 2 Z GENERAL CONTRACTOR, 61ST W, RICHLAND WA	$	500
APEX PLUMBING & MECHANICAL PIPING LLC, WEST PINE ST, YAKIMA WA	$	500
COZY COMFORT, PO BOX, WENATCHEE WA	$	1,000
DRISCOLL, CODY, BEERS RD, PROSSER WA	$	500
EXPEDITOR SYSTEMS, NINE MCFARLAND DR, ALPHARETTA GA	$	500
GOLD MEDAL DEV GROUP, NE VANCOUVER MALL DR., VANCOUVER WA	$	500
HORSE HEAVEN HEATING & COOLING S WILGUS RD, PROSSER WA	$	1,500
INDOOR AIR SOLUTIONS, PO BOX, SELAH WA	$	1,000
NORTHWEST STAGED EVENTS LTD, PO BOX, GLIDE OR	$	500
PALOMAREZ, JULIO, EAST RIDGE DR, YAKIMA WA	$	500
WOLOSIK, DAVID, LAKE TONASKET WA	$	500
WYLIE, MIKE 3RD ST, MESA WA	$	500

Region 6 – Eastern Washington

COZY AIR, PO BOX, NEWMAN LAKE WA	$	3,000
MEDICAL LAKE SAND & GRAVEL, W THORPE RD, MEDICAL LAKE WA	$	500
NORTHERN LIGHTS WINDOWS N' MORE, N MORRISON RD, SPOKANE WA	$	500

Central Office

ACCURATE HEATING & A/C, 22ND SW, SEATTLE WA	$	1,000
ACTION AIRE INC, PO BOX, ABERDEEN WA	$	500
GALLISON, LUKE, PO BOX, MILL CREEK WA	$	500
NEON & ELECTRIC SIGNS LLC, 15TH AVE W, SEATTLE WA	$	500
OLSEN, BRETT, PO BOX, AUBURN WA	$	3,000
REFRIGERATION SERVICES NW LLC, LE-LOU-WA PL NE, TACOMA WA	$	2,000

Violation – Hiring Uncertified Electricians

Region 1 – North Puget Sound

CAP CONSTRUCTION, 6TH AVE SE, EVERETT WA	$	100
DON NELSEN CONSTRUCTION, S DAVIES RD, LAKE STEVENS WA	$	100
E S & A INC, OAK PATCH RD, EUGENE WA	$	250
FANCY SIGN.COM, PACIFIC HWY S, FEDERAL WAY WA	$	100
IN-TECH ELECTRICAL CONTRS INC, 9TH PL SE, LAKE STEVENS WA	$	100
J CAT CONSTRUCTION, LOVES HILL DR, SULTAN WA	$	100
JOHN F BROWN CONSTRUCTION INC, 202ND ST SE, BOTHELL WA	$	250
P O P ELECTRIC INC, PO BOX, BOTHELL WA	$	250

Region 2 – King County

GRIFFIS HEATING INC, E MAIN, AUBURN WA	$	500
MIKE ALLENBACH ELECTRIC, W PROSPECT, SEATTLE WA	$	250
SERVICE STEEL CO, PO BOX, KENT WA	$	500
YOUNG ELECTRIC SIGN CO, E 41ST ST, GARDEN CITY WA	$	1,000

Region 3 – Pierce & Kitsap County & Olympic Peninsula

FEDERAL FIRE SAFETY INC, 36TH AVE W, LYNWOOD WA	$	250
INDOOR COMFORT SYSTEMS INC, VIOLET MEADOW ST S, TACOMA WA	$	250
NORTHWEST COMMERCIAL SERVICE, PO BOX, RENTON WA	$	100
OLYMPIC WIRING INC, PROVOST ROAD NW, SILVERDALE WA	$	100

Region 4 – Southwest Washington

BRANDT, WEST LITTLE YORK, HOUSTON TX	$	500
GODVIN, JOEL, NW 160 CT, BEAVERTON OR	$	200
HOMESTEAD BUILDERS, PO BOX, GRAPEVIEW WA	$	100
OREGON AIRE INC, NE 33RD DRIVE, PORTLAND OR	$	250
SCHNEIDER HOMES INC, SOUTHCENTER BLVD, TUKWILA WA	$	100
SONITROL OF EVERETT, CALIFORNIA AVE, EVERETT WA	$	250

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SUNLIGHT ELECTRIC INC, NE 65TH AVE, VANCOUVER WA	$	500
TUBE ART DISPLAYS INC, OCCIDENTAL AVE S, SEATTLE WA	$	250
WELL DONE ELECTRIC CO, SE ROYER RD, CLACKAMAS OR	$	100
Region 5 – Central Washington		
ALLSTAR ELECTRIC INC, W LINCOLN, YAKIMA WA	$	100
APEX PLUMBING & MECHANICAL PIPING LLC, W PINE ST, YAKIMA WA	$	250
EXPEDITOR SYSTEMS, NINE MCFARLAND DR, ALPHARETTA GA	$	250
L W MCCANDLISH ELECTRIC INC, CENTER RD, WENATCHEE WA	$	100
Central Office		
BRUCE SMITH HEATING & COOLING INC, 44TH AVE W, LYNNWOOD WA	$	600
D L C ELECTRIC INC, PO BOX, LAKEWOOD WA	$	250
ELITE LIGHTING & ELECTRICAL, PO BOX, ARLINGTON WA	$	200
LIGHT DOCTOR LLC, PO BOX, WOODINVILLE WA	$	250
MAJOR ELECTRIC INC, 142ND AVE NE, WOODINVILLE WA	$	200
Violation – Uncertified Electrician		
Region 1 – North Puget Sound		
AHO, WAYNE, PO BOX, GARDEN VALLEY ID	$	250
BEERMAN, PARKRIDGE RD, BELLINGHAM WA	$	250
BRANTNER, JESS, GOLD CK LP RD, CARLTON WA	$	250
BROWN, MIKE, 202 ST SE, BOTHELL WA	$	250
CARRIGAN, MICHAEL, SANBORN AVE, EUGENE OR	$	250
CHILSON, TYSON, NORTH CARPENTER RD, SNOHOMISH WA	$	250
GRIPP, PAUL, S 4TH AVE, EVERETT WA	$	1,750
HAGEMAN, JEFFREY, CHAMPION DR, ARLINGTON WA	$	250
LANCASTER, JEFFREY, 382ND AVE SE, SNOQUALMIE WA	$	200
LANDERS, PAUL, PARADISE LAKE, SNOHOMISH WA	$	100
LAZANO, JOHN, WAUGH RD, MOUNT VERNON WA	$	250
LEMKE, HOWARD, DEER PARK LN, MOUNT VERNON WA	$	250
LEONARD, KORY, 39TH DR NE, ARLINGTON WA	$	250
MARTEL, DANIEL, BAILER HILL RD, FRIDAY HARBOR WA	$	250
MESNEAK, ROBERT, COLLEENS LN SE, MONROE WA	$	250
MICHEL, DAVID, COLLEGE AVE, EVERETT WA	$	250
NELSON, EDWARD PO BOX, BLACK DIAMOND WA	$	250
PRITZKAU, CRAIG, 6TH AVE SE, EVERETT, WA	$	100
RAMSTEAD, BOOTH, 99TH AVE SE, LAKE STEVENS WA	$	250
RODRIGUEZ, GAB, RAVENNA NE UNIT #208, SEATTLE WA	$	250
RUIZ, ANTONIO, 209TH AVE SE, MONROE WA	$	250
SCHUBERT, TIM, PO BOX, GOLD BAR WA	$	250
SIMONSON, JEFFREY, NE 12TH, BELLEVUE WA	$	250
STOUT, STEVEN, BLUEBERRY LANE, MONROE WA	$	250
TALLEY, ALBERT, LOVES HILL RD, SULTAN WA	$	250
TESARIK, JOHN, MEADOW LANE, MOUNT VERNON WA	$	250
WEBER, MARK, NE 78TH ST, SEATTLE WA	$	50
WHITE, BRYCE, BOX, GOLD BAR WA	$	100
Region 2 – King County		
ALEXANDER, LANCE, S WARNER, TACOMA WA	$	500
BOSLEY, DERRICK, SEWARD PARK AVE S, SEATTLE WA	$	250
BRIMER, CHARLES, SOUTH THOMPSON AVE, TACOMA WA	$	250
BROWN, JOSEPH, 11TH AVE SW, BURIEN WA	$	250
CARPENTER, DANIEL, ELM ST, SULTAN WA	$	500
FICKER, RONALD, 230TH AVE SE, MAPLE VALLEY WA	$	250
GONZALES, BOB, 3RD ST, LAFAYETTE OR	$	250
HARRIS, HARRY, 37TH AVE SW, FEDERAL WAY WA	$	100
NEWTON, BRIAN NE 145TH ST, KENMORE WA	$	250
SUTHERLAND, GUY, CRAWFORD RD, LYNNWOOD WA	$	250
TOOMBS, RICHARD, 5TH AVE SW, FEDERAL WAY WA	$	250
WARREN, BRIAN, SW TRILLIUM AVE, BEAVERTON OR	$	250
WILLERT, STEVE, 2ND ST NE, AUBURN WA	$	250
WIRTA, GARY	$	250
WISE, ERIC, SR 92, LAKE STEVENS WA	$	250
WRIGHT, NICK, LOWER DORRE DON WAY SE, MAPLE VALLEY WA	$	250
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
COURT, THOMAS, 4TH AVE NW, PUYALLUP, WA	$	250
COURTS, THOMAS, FOREST RIM CT, PUYALLUP WA	$	500
EARL, NATHAN, SW 16TH PL, FEDERAL WAY WA	$	250
KEITHLEY, CHRIS, ATWOOD PL, SEQUIM WA	$	250
LOVETT, CLYDE, PT TOWNSEND WA	$	250
MARSH, WHITNEY, 438TH ST CT E, EATONVILLE WA	$	250
SCOTT, DANIEL, 136TH AVE E, PUYALLUP WA	$	500
ZINTER, JIMMY, QUINAULT DR NE, BREMERTON WA	$	250

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Region 4 – Southwest Washington

ARVIN, JEFFREY, NE HOOD ST, HILLSBORO, OR	$	250
EDWARDS, DAN, PO BOX, GRAPEVIEW WA	$	250
FOSTER, TIM, SE BLUEBIRD, MILWAUKEE OR	$	250
GODVIN, JOE, NW 160TH CT, BEAVERTON OR	$	250
HOPKINS, JAMES, BOX, WINDERMERE BC	$	250
HUSTON, JACK, SE ARCADIA, SHELTON WA	$	250
JARVIS, KEN, 116TH AVE CT E, PUYALLUP WA	$	250
JINES, STEVEN, N 3 ST, ELMA WA	$	250
JONES, DAVID, S BEAR MEADOW CT, MOLALLA OR	$	250
KITCHEN, JAMES, PO BOX, RAINIER, WA	$	250
NARAYAN, T, NW 87TH ST, VANCOUVER WA	$	250
ORLOVSKIY, VICTOR, NE 34 WAY, VANCOUVER WA	$	500
POBEREZHYY, YURIYVO	$	250
SIROTKIN, KONSTANTIN, NE 304 TH, WASHOUGAL WA	$	250
STEVANUS, SCOTT, S REDDING LANE, MULINO OR	$	250
WILCOX, PAUL, CHERRY ST, KELSO WA	$	250
ZADUBA, ANATOLLY, NE 58 CT, .VANCOUVER WA	$	250

Region 5 – Central Washington

AITKEN, LARRY, PO BOX GLIDE OR	$	250
BROWN, DAVID, SECOND ST, WENATCHEE WA	$	500
HAYMAN, THOMAS, NORTH 13 ST, SELAH WA	$	250
MEHARRY, LAUREN, PANORAMA DR NE, MOSES LAKE WA	$	250
MENDOZA, FRANCISCO, PO BOX, WENATCHEE WA	$	250
NYSTROM, JON, C/O EXPEDITOR SYSTEMS, ALPHARETTA GA	$	250
OHARA, JAMES, MARTIN RD, GRAND COULEE WA	$	250
PALOMAREZ, JULIO, EAST RIDGE DR, YAKIMA WA	$	250
ROBBINS, GREGORY, WESTBROOK LOOP, YAKIMA WA	$	100
WOLOSIK, DAVID, ELL LAKE RD, TONASKET WA	$	250

Region 6 – Eastern Washington

ATHA, RICH, FLAGSTAFF, RATHDRUM ID	$	250
BYUS, CHRIS, PO BOX, SPOKANE WA	$	250
DODD, JAMES, N HAYE ST, NEWMAN LAKE WA	$	500

Central Office

BLAKEY, KEITH, PO BOX, CLINTON WA	$	250
CONRAD, TERRANCE, 196TH ST SE, BOTHELL WA	$	600
CURTIS, TIM, 148TH ST SW, LYNNWOOD WA	$	500
GALLISON, LUKE, PO BOX, MILL CREEK WA	$	250
KUNASCHK, THOMAS, 102ND ST NE, MARYSVILLE WA	$	600
MIRACLE, BENJAMIN, ASH WAY, LYNNWOOD WA	$	250
NISSEN, DEAN, 175TH ST, SEATTLE WA	$	250
OAKES, TERRY, S KING ST, CENTRALIA WA	$	350
ROSS, MARK, 706 S 12TH AVE, YAKIMA WA	$	250
ROWLANDS, TIMOTHY, 15TH AVE SE, BOTHELL WA	$	600

Violation – No Electrical Work Permit

Region 1 – North Puget Sound

AEROSPACE DEFENSE MFG, SMOKEY POINT BLVD, MARYSVILLE WA	$	250
ASSOCIATED HEATING/SHEET METAL INC, PO BOX, MONROE WA	$	2,000
AUTOMATED EQUIPMENT, E MARGINAL WAY S, SEATTLE WA	$	250
BECK, DARRIN, PICNIC POINT RD, EDMONDS WA	$	250
BJARNSON, RICK, VISTA WAY, EDMONDS WA	$	250
BRANTNER, JESS, GOLD CK LP RD, CARLTON WA	$	250
C D C HEATING 10TH PL NE, EVERETT WA	$	250
DEPENDABLE HEATING & A/C SERVICE, EVERGREEN WAY, EVERETT WA	$	250
DON NELSEN CONSTRUCTION, S DAVIES RD, LAKE STEVENS WA	$	250
ETHAN ELECTRIC, AVENUE B, SNOHOMISH WA	$	500
FANCY SIGN .COM, PACIFIC HWY S, FEDERAL WAY WA	$	250
G B SYSTEMS INC, NE 175TH S, KENMORE WA	$	250
GILL, IMNEETPAL, 60TH AVE NE, MARYSVILLE WA	$	250
GOSHORN, EARL 127TH AVE SE, SNOHOMISH WA	$	250
IN-TECH ELECTRICAL CONTRS INC, 9TH PL SE, LAKE STEVENS WA	$	250
JOHN F BROWN CONSTRUCTION INC, 202 ST SE, BOTHELL WA	$	250
MCDOWELL, JOSH, 175TH PL, SE MONROE, WA	$	250
MERIT ELECTRIC, INC, 36TH AVE W, LYNNWOOD WA	$	250
MERIT MECHANICAL INC, 153RD AVE NE, REDMOND WA	$	4,000
MESNEAK, ROBERT, COLLEENS LN SE, MONROE WA	$	250
MEYER, LOUIS, DAYTON AVE N, SHORELINE WA	$	250
MOLLGAARD FLORAL, PO BOX, MILL CREEK WA	$	500
MORGAN MECHANICAL LLC, CASCADIAN WAY, LYNNWOOD WA	$	250
MOUNTAIN VALLEY CHAPEL, LEWIS ST, GOLD BAR WA	$	250

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PARRISH, DEAN, EVERGREEN WAY, EVERETT WA	$	250
PETTERSSON, RAGNAR, 15TH AVE SE MILL CREEK WA	$	250
POINTER ELECTRIC INC, RECTOR RD, BOW WA	$	1,000
POWERCOM, PO BOX, SPOKANE WA	$	1,000
PROTECTION & COMMUNICATIONS INC, 40TH AVE W, LYNNWOOD WA	$	2,000
QUALITY ONE LANDSCAPING & IRRIGATION, 209TH AVE SE, MONROE WA	$	500
RAMSTEAD, BOOTH, 99TH AVE SE, LAKE STEVENS WA	$	250
SCRIBNER ELECTRIC INCORPORATED, PO BOX, WOODINVILLE WA	$	250
SEAHURST ELECTRIC INC, SMITH AVE, EVERETT WA	$	1,000
SMITH, JAMES, HWY 9, MOUNT VERNON WA	$	250
STARRITT, ROBERT, SNOHOMISH AVE SE, SNOHOMISH WA	$	250
SUMMIT HEATING/SHEET METAL INC, 165TH AVE SE, MONROE WA	$	250
SYSTEM SOLUTIONS LLC PO BOX 2700, RENTON WA	$	250
T & T SCHUBERT CONSTRUCTION, PO BOX GOLD, BAR WA	$	250
TRUSSELL, JERRY, 236TH AVE NE, GRANITE FALLS WA	$	500
VANHULLE, CHAD, PINE ST, SULTAN WA	$	250
VECA ELECTRIC CO INC, 7TH AVE S, SEATTLE WA	$	1,000
WESTWOOD EXECUTIVE HOMES LTD, PO BOX, LYNNWOOD WA	$	250
Region 2 – King County		
AAA ELECTRIC, MILWAUKEE AVE. E, PUYALLUP WA	$	250
ABDON, FELIX, 47TH AVE E, FIFE WA	$	250
AIR SUPPLY SYSTEMS INC, PO BOX, BUCKLEY WA	$	250
B B & T SIGN SERVICES, BOTHELL-EVERETT HWY, MILL CREEK WA	$	1,000
COLUMBIA HEATING, SE 258TH, KENT WA	$	250
DELTA ELECTRIC MOTORS, W VALLEY HWY, AUBURN WA	$	250
FEDERAL WAY SIGN, S 341ST PL, FEDERAL WAY WA	$	250
GOODGUY'S HEATING & COOLING, 33RD AVE S, SEATTLE WA	$	250
GREG'S ELECTRICAL SERVICES INC, SE 46TH WAY, ISSAQUAH WA	$	1,000
GRIFFIS HEATING INC, E MAIN, AUBURN WA	$	250
HAN KOOK ELECTRIC, 13TH PL SW, FEDERAL WAY WA	$	250
HUME, GLORIA, CORNELL AVE, SEATTLE WA	$	250
JLE ENTERPRISES9615 NE VANCOUVER WAYPORTLANDOR	$	250
JONES, MARK, SE 210TH ST, RENTON WA	$	250
LORENZEN, DAVID, S 381ST WAY, AUBURN WA	$	250
MARSHALL, STEVEN, E 61ST ST, TACOMA WA	$	250
MCLENDON HARDWARE, FRYAR AVE, SUMNER WA	$	250
NORTH STAR ESPRESSO, SEATAC WA	$	250
OLIVER, BOB, B ST NW, AUBURN WA	$	250
PYRAMID ELECTRIC INC, 107TH PL W, EDMONDS WA	$	1,250
QUALITY POWER INC, PO BOX, SPANAWAY WA	$	250
QWEST CORPORATION, NEWPORT WAY NW, ISSAQUAH WA	$	1,000
RENTON VALLEY ASSOCIATES, E MERCER WAY, MERCER ISLAND WA	$	250
SEATTLE'S BEST WINDOWS, INDUSTRY DR ST E, SEATTLE WA	$	250
SERVICE STEEL CO, PO BOX, KENT WA	$	250
SUMMIT DELI & GAS, SNOQUALMIE PASS WA	$	250
WASHINGTON ENERGY SERVICES CO, THORNDYKE AVE W, SEATTLE WA	$	250
WRIGHT INC, PO BOX, SEATTLE WA	$	250
ZEPHYR COMMUNICATIONS INC, 1ST AVE. S, SEATTLE WA	$	250
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
AHEARN ELECTRIC	$	250
BAKER ELECTRIC, PO BOX, BREMERTON WA	$	1,000
BLAZE ELECTRIC & SERVICE CO, PT FOSDICK DR NW, GIG HARBOR WA	$	500
CONTROL CONTRACTORS INC, POPLAR PL S, SEATTLE WA	$	250
COURTS, LENNY, 19TH AVE E, TACOMA WA	$	250
DELANCY ELECTRIC LLC, HORSTMAN RD SE, PORT ORCHARD WA	$	250
ECONOMY SHEET METAL AND HEATING, SR 303 NE, BREMERTON WA	$	500
FIRE ONE INC, PO BOX, TUKWILA WA	$	250
GALLA CONSTRUCTION INC, MUIRKIRK LN SW, PORT ORCHARD WA	$	250
KIRSCH ELECTRIC, PO BOX, SEQUIM WA	$	1,000
NORTHWEST COMMERCIAL SERVICE, PO BOX, RENTON WA	$	250
PENINSULA SCHOOL DISTRICT, 62ND AVE NW, GIG HARBOR WA	$	250
R C CONCRETE, 138TH AVE. E, PUYALLUP WA	$	250
REC RESIDENTIAL ELECTRIC INC, PO BOX, BLACK DIAMOND WA	$	1,000
RIMROCK ELECTRICAL SERVICE, P O BOX, DES MOINES WA	$	1,000
TOTAL SIGN SERVICE, 224TH ST E, GRAHAM WA	$	1,000
Region 4 – Southwest Washington		
ADVANCED ELECTRIC INC, NE 58 STREET, VANCOUVER WA	$	250
ADVANCED ELECTRIC SIGNS INC, DOWN RIVER RD, WOODLAND WA	$	250
BRANDT, WEST, LITTLE YORK, HOUSTON TX	$	500
CLEARWOOD COMMUNITY ASSOCIATION, CLEAR LAKE BLVD, YELM WA	$	250

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ERIC OLSON ELECTRIC CO.	$	250
GODVIN, JOEL, NW CT, BEAVERTON OR	$	250
HAMILTON, BETH, NE 63RD ST, VANCOUVER WA	$	250
HILDEBRAND, PAMELA, 187TH AVE SW, ROCHESTER WA	$	250
HOMESTEAD BUILDERS, PO BOX, GRAPEVIEW WA	$	500
KIRKWOOD, GALEN, OLD MILITARY RD, TENINO WA	$	250
MAGNOLIA HI FI INC, S 231 STREET, KENT WA	$	1,000
MASTERWIRE ELECTRIC INC, NE 100TH ST, VANCOUVER WA	$	4,000
MILLENNIUM ELECTRIC, NW 9TH CIRCLE, CAMAS WA	$	3,000
MURPHY, JOHN MICHAEL, NE 7TH ST, VANCOUVER WA	$	250
MUZAK LLC, LAKEMONT BLVD, FORT MILL SC	$	2,000
NAYDEN LLC, PO BOX VANCOUVER WA	$	250
PROVASOLI, ROBERT, NEAT RD, YELM WA	$	250
RED'S ELECTRIC CO INC, SE CLINTON, PORTLAND OR	$	250
SUTHERLAND ELECTRIC, NE 184TH ST, BRUSH PRAIRIE WA	$	1,000
WELL DONE ELECTRIC CO, SE ROYER RD, CLACKAMAS OR	$	2,250
Region 5 – Central Washington		
ADVANTAGE HEATING & A/C INC, PO BOX SELAH WA	$	250
AIRE PRO INC, MERIDIAN AVE. E, EDGEWOOD WA	$	2,000
ALL CLIMATE HEATING, A/C & REFRIGERATION, JACKSON DR, GRAND VIEW WA	$	250
ALLSTAR ELECTRIC INC, W LINCOLN, YAKIMA WA	$	250
APEX PLUMBING & MECHANICAL PIPING LLC, W PINE ST, YAKIMA WA	$	250
CHEMATRON ELECTRIC, ADRIAN RD NE, SOAP LAKE WA	$	250
CHINOOK HEATING & AIR INC, S KENT, KENNEWICK WA	$	1,000
CORREA, JESUS, TUMAC DRIVE, YAKIMA WA	$	250
COZY COMFORT, PO BOX, WENATCHEE WA	$	500
DREHER, DICK, SOUTH FIRST,YAKIMA WA	$	250
EDISON ELECTRIC, S 32ND AVE, YAKIMA WA	$	750
EXPEDITOR SYSTEMS, NINE MCFARLAND DRIVE, ALPHARETTA GA	$	250
FARMERS ELECTRIC, E HEMLOCK, OTHELLO WA	$	1,000
GARCIA, ADALBERTO, S 41ST ST, YAKIMA WA	$	250
GENEXT LLC, PO BOX, WENATCHEE WA	$	250
HORSE HEAVEN HEATING & COOLING, S WILGUS RD, PROSSER WA	$	250
INDOOR AIR SOLUTIONS, PO BOX, SELAH WA	$	500
MOON SECURITY SRVS INC, PO DRAWER, PASCO WA	$	250
NORTHWEST STAGED EVENTS LTD, PO BOX, GLIDE OR	$	250
OH, CHRIS, YAKIMA VALLEY HIGHWAY, SUNNYSIDE WA	$	250
REFIGERATION SERVICES LLC, PO BOX, ZILLAH WA	$	250
REMCOE INC, WILLIAMS BLVD, RICHLAND WA	$	250
SONRISE ELECTRIC, PO BOX, PATTERSON WA	$	1,250
TRI-AIR HEATING & A/C INC, CLARK CT WEST, RICHLAND WA	$	1,000
WALSH, MIKE, NE 149TH PL, DUVALL WA	$	250
WAYNES LOCK & KEY, N FIRST ST, SUNNYSIDE WA	$	250
Region 6 – Eastern Washington		
CLARK, MARK, GREGGS RD, NEWPORT WA	$	250
I C C ELECTRIC, CAYUSE COVE LOOP RD E, DAVENPORT WA	$	750
P J'S PLUMBING & HEATING, N ELM STREET, SPOKANE WA	$	250
STREETFIRE ENGINEERING SEC SVC, N HAYE, NEWMAN LAKE WA	$	250
Central Office		
BLAKEY, KEITH, PO BOX, CLINTON WA	$	250
GALLISON, LUKE, PO BOX, MILL CREEK WA	$	250

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 9 No. 1** **January 2006**

Electrical Board Recruitment For Three Positions

There are currently are three board positions vacant or up for re-appointment in July 2006. The three positions are: electrician, general public, and telecommunication provider. Applications must be received, by the Governor, no later than March 15, 2006. The Governor is placing emphasis on achieving greater ethnic, gender and geographic balance on the Electrical Board. Applications must be made, to the Governor's office using the *Application for Gubernatorial Appointment to a Board or Commission* form. Requests for copies of the application and any questions may be directed to Christina Pourarien at (360) 902-5259 or downloaded at:

http://www.governor.wa.gov/boards/default.asp

Applicants should submit a letter of interest, completed application form, current resume, and letters of recommendation to the Governor's office (Office of the Governor, Attn: Shana Melanson, PO Box 40002, Olympia, WA 98504-0002).

Electrical-Compliance, Outreach, Regulation and Education (E-CORE) Team

The new Electrical-Compliance, Outreach, Regulation & Education (E-CORE) team is just completing training. The E-CORE team will focus on reducing the effects of the underground economy on legitimate electrical contractors and electricians and the importance of getting inspections. The E-CORE team will operate across the state coordinating with contractors, local inspectors and city jurisdictions to achieve maximum effectiveness.

The E-CORE team will focus on contractors' concerns with the underground economy (i.e. unlicensed electrical contractors, uncertified electricians, and those who fail to get electrical permits). E-CORE will also make referrals to other department programs for violations of the general contracting, industrial insurance, and jobsite safety laws.

The E-CORE team hopes to receive good referrals from contractors and electricians competing with firms and individuals who are operating out of compliance. If you have verifiable information of unfair competition, illegal activities, or illegal work in progress, contact an E-CORE team member.

You can contact an E-CORE team member at:

- Supervisor, Faith Jeffrey, **mailto:scfa235@lni.wa.gov**
- Puget Sound and NW Washington, Ken Copeland **mailto:copk235@lni.wa.gov** or (206) 835-1130
- SW Washington, Charles Brinkmeyer **mailto:bric235@lni.wa.gov** or (360) 896-2327
- Eastern Washington, Phil Jordan **mailto:jorp235@lni.wa.gov** or (509) 324-2611

You will increase the chances for a successful investigation if you e-mail an E-CORE team member a completed *Electrical Inspection Witness Statement* (form F500-087-000) or *Investigation Report* (form F500-076-000) available on our Web site at:

http://www.lni.wa.gov/TradesLicensing/Electrical/FormPub

Online Permit Applications – Look For Changes

Some changes are coming to the Electrical Permitting and Inspection System (EPIS) application for contractors using the "user name password" function. In March 2006 we will be changing the EPIS logon method. We will begin using Washington's centralized Secure Access Washington (SAW) system.

Why are we moving to Secured Access Washington (SAW)? Secure Access Washington is the State of Washington site that provides users the ability to use one user name and password to access all online services offered by state agencies.

What does this mean? You will have to subscribe to SAW to continue using the Electrical Permits and Inspections Systems (EPIS). The one ID and password will give you access to all state online services.

How do I prepare for the change? Until you receive the prompt in March, **you do not have to do anything**.

How will I change my ID and password? In March you will log into the EPIS application and be prompted with information on how to subscribe to the SAW system. You will be directed to the SAW site where you will create your new user ID and password for the use in EPIS. You may be asked to create a user ID if the one you have is not available for use in SAW. The requirements for user names and passwords are similar to those used in most other online services. (This would be a combination of upper case and lower case letters and numbers or special characters.)

What happens if I don't subscribe to SAW? Users will have 30 days to join the SAW system. At that time, you will no longer be able to access the EPIS secured access site unless you have a SAW ID and password.

If you have any questions regarding these changes, you may contact Phyllis Cooper, Information Technology Specialist, at **mailto:tayp235@lni.wa.gov** or (360) 902-5293.

● Installation of Pre-Manufactured Heat Mats

Placing pre-manufactured heat mats in tile grout has been added to Class A basic electrical work (i.e. work that doesn't require a permit). This rule change became effective November 25, 2005. WAC 296-46B-900(8)(D) says: "*Embedding pre-manufactured heat mats in tile grout where the mat is listed by an approved testing laboratory and comes from the manufacturer with pre-connected lead-in conductors. All listing marks and lead-in conductor labels must be left intact and visible for evaluation and inspection by the installing electrician and the electrical inspector*." **Placing pre-manufactured heat mats is considered a Class A electrical installation**.

The installer does not have to be a certified electrician or an electrical trainee under supervision to place the pre-manufactured heat mat in tile grout (e.g. a tile setter). However, **the connections of the cable leads to the controlling device must be done by a licensed electrical contractor using a certified electrician.** An electrical permit and inspection is required for the electrical work.

The field installation of other single-wire heat cables (or any mats that require field-connection of the non-heating leads) is an electrical installation and must be done by an electrician under a permit and inspection prior to covering.

● Sealing Locknuts and Conduit Fittings

NEC 312.2(A) requires enclosures installed in wet locations be weatherproof. Raceways or cables entering these enclosures **above the level of uninsulated live parts** must use fittings listed for wet locations. Watertight connections are necessary (and required) in areas when gravity could lead water directly into live parts. Fittings supplied with a weatherproof enclosure by the manufacturer are approved for the intended use. Field-installed weatherproof hubs (i.e. Myers hubs) are expensive and many installers opt for sealing locknuts to maintain the weatherproof integrity of the enclosure.

Sealing locknuts are intended for use with **threaded rigid metal conduit and intermediate metal conduit only.** On a conduit entering perpendicular to the enclosure surface they are to be installed with one sealing locknut on the outside <u>or</u> the inside with an ordinary locknut or sealing locknut on the opposite side of the enclosure to maintain the weatherproof integrity. **Rigid nonmetallic conduit (PVC) terminal adapters are not suitable for use with sealing locknuts**. PVC entries into weatherproof enclosures above the level of uninsulated live parts must be made with fittings listed for the purpose.

● Electrical Question of the Month

This Month's Question: The minimum ampacity for circuit conductors supplying a varying duty pump motor with a 30-minute duty rating shall be sized based on what percentage of the motor nameplate current? **A)** 150%, **B)** 125%, **C)** 115%, **D)** 100%.

Last Month's Question: Where electrical equipment is installed to obtain a series combination rating, the identification plate must be substantially what color? **A)** Green, **B)** Orange, **C)** Yellow, **D)** Red. The answer is: **C)** [WAC 296-46B 110(4)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 12** **December 2005**

WAC Public Hearings

Public hearings will be held in two locations for the proposed electrical Washington Administrative Code (chapter 296-46B WAC) changes projected to be effective June 30, 2006. The revisions include department proposals and individual proposals recommended by the Technical Advisory Committee and the Electrical Board. The dates and times for the public hearings are:

11:00 AM, **January 11, 2006**	Ellensburg	Hal Holmes Community Center, 209 Ruby St.
9:00 AM, **January 12, 2006**	Tumwater	Labor & Industries, 7273 Linderson Way SW, Room S117

Electrical Board Recruitment For An Electrician Position

There is a new vacancy on the Electrical Advisory Board for an electrician member. Board members are typically appointed for four-year terms. The Governor is placing emphasis on achieving greater ethnic, gender and geographic balance on the Electrical Board. The Eastern Washington electrical industry currently is under-represented. Interested certified electricians may apply. Applications must be made, to the Governor's office, using the *Application for Gubernatorial Appointment to a Board or Commission* form. Requests for copies of the application and any questions may be directed to Angie Wharton at (360) 902-5259 or downloaded at

http://www.governor.wa.gov/boards/default.asp

Applicants should submit a letter of interest, completed application form (above), current resume, and letters of recommendation to the Governor's office (Office of the Governor, Attn: Shana Melanson, PO Box 40002, Olympia, WA 98504-0002).

Upcoming Stakeholder Meetings

Locations and times have been finalized for the upcoming stakeholder meetings. Regional and Central Office staff will take questions and update stakeholders on the Electrical Program activities from **7:00 PM-9:00 PM** at the following locations:

February

2nd, Tumwater	7273 Linderson Way, Auditorium
6th , Yakima	500 N. Keys Rd. Pacific Power
7th, Kennewick	2721 W 10th Av, Benton, PUD
8th, Spokane	W. 3410 Fort George Wright Drive
9th, Wenatchee	1151 Valley Mall Parkway, PUD
15th, Port Angeles	321 East 5th Street
16th, Bremerton	3027 Olympus Drive, Public Works
21st, Bellingham	311 Grand Ave. Court House
22nd, Everett	2320 California St, PUD
23rd, Tukwila	12806 Gateway Dr
28th, Vancouver	1200 Ft. Vancouver Way, PUD

March

1st, Tacoma	1102 Tacoma Avenue South, Library

Electrician, Master Electrician, and Administrator Exams Will Be Revised

February 1, 2006, is the target date for implementing electrical exams based on the 2005 NEC. From a candidate's standpoint, this should not affect a candidate's exam preparations. All exam questions are based on basic safety, Code, and theory fundamentals. These rarely change with a new NEC edition. Most changes in the exam are reference updates. Very few questions have been changed because of a code update.

After February 1st, the journeyman and specialty electrician exams will be divided into separate sections, similar to the master electrician and administrator exams. WAC and RCW questions will be in one section, Code and theory will be in another section. Total time allowed for the complete exams (both sections) will remain the same as it is now in the single-part exam. Both sections must be taken on your original examination. If you pass one section and fail the other, you will be allowed to reschedule the failed section. The total exam questions will remain similar to the current number asked.

Separating the state laws and rules material from the basic Code and theory material will allow an unsuccessful exam candidate to focus their studies on the specific areas where they are weak. This new

structure will also make it easier for the department to pursue further sharing of examinations with the other states involved in our reciprocal electrical licensing agreements.

● Inspection Fees For Outbuildings

We have been asked to clarify fee items in the residential section of the fee schedule.

Dwelling unit inspection fees are based on "square footage" including any attached garages regardless of service size or additional inside feeders. The special electrical equipment associated with some dwellings (e.g. swimming pools, spas, hot tubs, septic pumping systems) requires additional fees at one of two fee levels. The lower fee applies if the special equipment is inspected when the wiring in the associated dwelling unit is inspected; the higher rate applies if the special equipment is not inspected when the dwelling is inspected.

Residential outbuildings are inspected at one of two flat fees, regardless of the size of the circuit, feeder, or service that powers the building. The lower fee ($30.50) applies if the outbuilding is inspected when the associated dwelling unit is inspected, or the higher rate ($48.10) if the outbuilding is not inspected when the dwelling is inspected.

Note that "outbuildings" are structures that serve a direct accessory function to the residence, such as a pump house or storage building. "Outbuilding" does not include buildings used for commercial type occupancies or additional dwelling occupancies. All other miscellaneous structures on residential property have permit fees based on service or feeder size in WAC 296-46B-905(1)(b). If there is no dwelling unit on the property or a valid building permit for a dwelling unit, then any pump house, storage building, or other miscellaneous structure wired will be charged by feeder or service size from WAC 296-46B-905(1)(b).

The fees listed in WAC 296-46B-905 must always support the number of inspection trips requested by the permit holder. Any fee of less than $72.80 (two half-hour progress inspections) is expected to be completed in one requested inspection. If a contractor or homeowner buys a permit for $48.10 and schedules the work so two separate inspections are needed, the fee paid does not support the cost of the inspections. An additional trip fee ($36.40) will be added to the original fee to support the second inspection request.

Except for Class B labels, the department does not charge for return trips necessary to verify completion of safety corrections issued. The department also does not sell permits based only on trip fees. It is still department policy that we do not charge for requests to perform "final" inspections.

● Fire Alarm Systems, Security Systems, and Class B Labels

NEC Article 760 covers the installation of wiring and equipment for fire alarm systems, including all circuits controlled and powered by the fire alarm system. These systems include fire detection and alarm notification, voice communications, guard's tour, sprinkler water flow, and sprinkler supervisory systems. Fire alarm system installations are not eligible for Class B basic electrical work labels.

The criteria for whether a building is required to have a fire alarm system are found in NFPA 101 (Life Safety Code) and local building codes. Typically dwelling units do not require a "fire alarm system" when line voltage (battery back-up) smoke detectors are installed according to building codes. In such dwellings with low voltage security systems installed, heat and smoke detection devices and circuits may be included as an optional addition to the security system. These installations are eligible for Class B labels since they are not a fire alarm system.

Installers should note that some building officials are accepting a low voltage central fire alarm system in lieu of line voltage smoke detectors. This type of limited energy system would not be eligible for Class B labels since it is a true fire alarm system.

● Electrical Question of the Month

This Month's Question: Where electrical equipment is installed to obtain a series combination rating, the identification plate must be substantially what color? **A)** Green, **B)** Orange, **C)** Yellow, **D)** Red.

Last Month's Question: What is the maximum fine for violation of any of the provisions of the RCW that apply to electricians and electrical installations? **A)** $500, **B)** $1000, **C)** $5000, **D)** $10,000. The answer is: **D)** [RCW 19.28.131]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 11** **November 2005**

New Electrical Board Members Appointed

In the spring and summer we announced recruitments for Electrical Board positions opened by normal expiration of terms, retirements, and the addition of an Outside Line Worker position. Governor Gregoire appointed the following individuals to serve four-year terms as Electrical Board members. Tracy Prezeau was appointed to one of the three Electrician Seats, David A. Bowman, P.E., RCDD, was re-appointed to the Licensed Professional Electrical Engineer Seat, Fred Tricarico was re-appointed to the Telecommunications Worker Seat, Dave Gough was appointed to one of the three Electrical Contractor Seats, and Don Guillot was appointed to the new Outside Line Worker Seat.

The Board elected Gloria Ashford, Electrical Contractor Seat, as Chair and Jim Simmons, Electrical Contractor Seat, as Vice Chair. The remaining members of the Board are: Philip Parker, Electrician Seat; Michael Hendrix, Electrician Seat; Geoffrey Newman, Telecommunication Contractor Seat; Don Kopczynski, Electrical Utility Seat; David M. Jacobsen, Telecommunications Service Provider Seat; David S. Bowman, Manufacturer/Distributor Seat; Lea Wilson, General Public Seat; and Tom Phillips, Municipal Building Official Seat.

More Class B Installation Label Information

The worker performing the installation must affix a Class B installation label on the cover of the panelboard or overcurrent device supplying power to the circuit or equipment **prior to beginning the work.** After November 25, 2005 when the use of these labels is expanded to specific limited energy systems, telecommunications, and thermostat installations, the labels may be appropriately installed on the limited energy control panel, telecommunications equipment, or HVAC unit equipment controlled when the other locations are non-existent or remote.

The contractor portion and job site portion of the label must include the following information:

DATE OF WORK	SITE ADDRESS, CITY, COUNTY
ELECTRICAL CONTRACTOR'S NAME	SITE OWNER NAME AND CONTACT PHONE #
ELECTRICAL CONTRACTOR'S LICENSE #	DESCRIPTION OF WORK
INSTALLING ELECTRICIAN'S CERTIFICATE #	

The electrical contractor must return the contractor's portion of the label to the Department of Labor and Industries, Electrical Section, P.O. 44460, Olympia, WA 98504-4460 **within fifteen working days after the job site portion of the Class B installation label is affixed.**

Who Can Use Class B Labels?

Homeowners and business property owners may **not** use Class B installation labels. Licensed electrical and telecommunications contractors may purchase and use these labels only on eligible work. Additionally, after receiving permission from the Chief Electrical Inspector, health care, and large commercial or industrial facilities using appropriately certified electrician employees for eligible electrical work may purchase and use Class B labels.

Damaged Wires In Appliances Or HVAC Equipment – Class A Or Class B Work?

Electrical conductors in appliances, refrigeration, or HVAC equipment rarely fail due to a manufacturing defect. A wire failure is usually the result of physical damage. A defect in a related electrical device within equipment can cause overheating and insulation or terminal failure of an internal conductor. In either case, a certified electrician making a field judgment to repair a damaged wire is responsible for identifying and abating the original cause of the damage.

Wiring within equipment is **not** a "component" unless the wire itself is a manufacturer's replacement part or factory-attached wire lead integral to a replacement part. If a damaged wire meets this specific requirement, replacement is Class A basic electrical work. Permits are not required for Class A work.

Effective November 25, 2005 the like in kind replacement of internal wiring in appliances, refrigeration, or HVAC equipment that is not the manufacturer's replacement part will become Class B basic electrical work and be inspected on a random basis. Coupled with the requirement to be a licensed electrical contractor using an appropriately certified electrician, the Class B inspection method ensures that the installation conforms to appropriate safety standards.

Equipment must be returned to the original conditions of its listing when manufactured. Operating conditions like vibration, high ambient temperature, moisture, etc. dictate that replaced internal wiring must have the same size, stranding, insulation type, terminal configuration, and performance characteristics (e.g. press-on terminal lugs cannot be substituted for terminal eyes). An electrician doing this type of Class B work should try to find a way to leave some evidence of the original part available on the job site for comparison in case the work is inspected.

● Appropriate Fittings For Electrical Nonmetallic Tubing

Electrical nonmetallic tubing (ENT) is made of the same material used for rigid nonmetallic conduit. The outside diameters of ENT are compatible with standard connectors, couplings, and outlet boxes for rigid PVC. Installation instructions are provided with each bundle or coil of ENT outlining the procedure to be used when using cemented-on PVC conduit fittings and outlet boxes. These instructions include requirements for a specific cement to be used as well as the application method. None of the other grades of PVC cement may be used with ENT because they contain a higher percentage of solvents and utilize a dauber-type applicator to hold more cement. A brush applicator is supplied with the ENT cement and should be used to get the proper (lesser) amount of cement on the conduit to ensure the thinner walls are not degraded.

Cemented-on fittings or mechanical fittings identified for the purpose are suitable for use in poured concrete. When the product carton is marked "CONCRETE TIGHT WHEN TAPED" a fitting must be taped completely at the raceway to box fitting junction or raceway to raceway junction. NEC 362.12 prohibits the use of ENT for direct burial in the earth.

● Why Can't ENT Be Installed Outdoors?

ENT was designed as an in-building product. Unlike rigid nonmetallic PVC conduit, ENT does not have ultraviolet (UV) inhibitors added to the PVC compound. It is adversely affected by the UV rays from the sun. ENT is factory-packaged in an opaque wrap to protect the product from such exposure. Contractors that use this product know from experience that unprotected outside storage of ENT may result in brittleness in as little as 3-4 months.

● Circuits Supplying Gas Furnaces

A gas furnace is not a "portable appliance" or equipment requiring "frequent interchange", nor does it meet any of the other conditions of use for flexible cord wiring methods. NEC 400.8 states *"flexible cords and cables shall not be used as a substitute for the fixed wiring of a structure."* Although some installers attempt to use this as a quick, inexpensive method to make a power connection, flexible cords can not be used as the wiring method for connection of a gas furnace to its branch-circuit.

NEC 422.12 places additional requirements on a branch-circuit for a gas furnace. This article requires, "*Central heating equipment other than fixed electric space-heating equipment shall be supplied by an individual branch circuit.*" An exception allows auxiliary equipment directly associated with the heating equipment, such as pumps, valves, electrostatic air cleaners, and humidifiers, to be connected to the same branch circuit.

● Electrical Question of the Month

This Month's Question: What is the maximum fine for violation of any of the provisions of the RCW that apply to electricians and electrical installations? **A)** $500, **B)** $1000, **C)** $5000, **D)** $10,000.

Last Month's Question: The job site portion of the label for a Class B installation must include: **A)** Building owner's name, **B)** The job site address, **C)** Date of the work, **D)** Contact telephone number. The answer is: **A), B), C), and D).** [You need to have a Class B label in your possession to get the answer right. All of this information is required to be filled out on both the contractor portion and the job site portion of the label.]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 10SE** **October 2005**

SPECIAL EDITION

● WAC RULE CHANGES EFFECTIVE NOVEMBER 25, 2005. UNDERSTAND CLASS B

The interim rule changes will become effective November 25, 2005. The complete text of these revisions is on our Web site at: http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/default.asp. These rule changes will help align inspection practices with different degrees of safety issues. **All articles in this special edition describing Class B installations have had the rule changes applied.**

● CLASS B ELECTRICAL INSPECTION LABELS --- EASY USE, COSTS $10

Class B basic electrical work permits were created to **reduce the cost to the customer** while maintaining a acceptable level of inspection oversight. Class B labels are used for specific "*Electrical work that requires minimal electrical circuit modifications and has limited exposure hazards.*" The **definition** of Class B basic electric work is in RCW 19.28.006 and the **specific rules for use of Class B labels are found in WAC 296-46B-110(6) through (10)**. The labels are sold in books of 20 for $200. After being purchased, the books may be split up and dispersed throughout the contractor's crews.

Each label has two parts; both parts must be filled out **before** the work is begun. The jobsite part must be affixed to the electrical panel, control panel, or equipment **before** starting the installation. The contractor part must be sent to the address printed on the bottom of the label within 15 working days from the use. Once filled out, the Class B label is an active permit and is subject to a random inspection.

● DID YOU KNOW?

Did you know that one class B permit may be used to install the low voltage wiring on an entire house or commercial building? Also, one Class B label may be used to extend a circuit, install a thermostat and change out a unit heater in a single house when all the work is done at the same time. When used for the specific work intended in the law and rules, Class B basic installation labels save time and money for contractors, their customers, and for the electrical program.

● WHAT CAN I USE CLASS B LABELS ON?

You can use Class B labels on the following **line voltage work where no cover inspection is necessary**:

- An extension of not more than one branch circuit.
- The circuit extension is limited to one hundred and twenty volts and twenty amps.
- The circuit extension shall supply no more than two outlets.
- An outlet in an extended circuit includes: General use snap switches/receptacles, luminaries, etc. It does not include wiring/cabling systems, isolating switches, magnetic contactors, motor controllers, etc.

You can change out the following items using a Cass B permit **("like in kind replacement")**:

- A single luminaire not exceeding two hundred seventy-seven volts and twenty amps.
- A motor larger than ten horsepower.
- The internal wiring of a furnace, air conditioner, refrigeration unit or household appliance.
- An electric/gas/oil furnace not exceeding 240 volts and 100 amps when the furnace is connected to an existing branch circuit. For the purposes of this section, a boiler is not a furnace.
- A unit heater, air conditioning unit or refrigeration unit not exceeding 240 volts, 30 minimum circuit amps when the unit is connected to an existing branch circuit.

- The **replacement** of not more than ten **standard** receptacles with **GFCI** receptacles.
- The **conversion** of not more than **ten snap switches to dimmers** for the use of controlling a luminaire(s).

Class B **low voltage systems** (T-stat, Security, Audio etc.) include the following:

- Repair and replacement of devices not exceeding one hundred volt-amperes in Class 2, Class 3, or power limited low voltage systems in one- and two-family dwellings.
- Repair and replacement of devices not exceeding one hundred volt-amperes in Class 2, Class 3, or power limited low voltage systems in other buildings, provided the equipment is **not for** fire alarm or nurse call systems and is not located in an area classified as hazardous by the NEC.
- The installation **(new work) of device(s) or wiring** for Class 2 or 3 thermostat, audio, security, burglar alarm, intercom, public address, or access control systems. This **does not include** fire alarm, nurse call, lighting control, industrial automation/control or energy management systems.
- The internal wiring of a furnace, air conditioner, refrigeration unit, or household appliance.
- Telecommunications cabling and equipment requiring inspection in RCW 19.28.470.

● HEAT CABLE REPAIR AND PREMANUFACTURED HEAT MATS

"Heat cable repair" and "premanufactured heat mats" in tile grout has been added to **Class A** basic electrical work (i.e. **work that doesn't require a permit**). The new rule WAC 296-46B-900(8)(D) states: "*Embedding pre-manufactured heat mats in tile grout where the mat is listed by an approved testing laboratory and comes from the manufacturer with pre-connected lead-in conductors. All listing marks and lead-in conductor labels must be left intact and visible for evaluation and inspection by the installing electrician and the electrical inspector*." This is now considered a Class A electrical installation. **The heat mat may be installed in the tile grout without a permit or inspection** by the tile setter**. The connections of the cable leads to the controlling device must be permitted by a licensed electrical contractor and installed by a licensed electrician**.

● REPEAT VIOLATORS MAY FACE HIGHER PENALTIES

A new paragraph has been added to WAC 296-46B-915. It states that: "*Continued or repeated violation may occur if the person, firm, partnership, corporation or other entity who violates a provision of chapter 19.28 RCW, chapter 296-46B WAC has received one or more written warnings of a similar violation within a one-year period*." This allows L&I to issue warnings for certain violations. However, if an entity continues to violate the law after a warning, a subsequent violation may be considered to be serious in nature and have a higher penalty.

● ARE ELECTRICIANS ALLOWED TO DO PLUMBING WORK?

A WAC change has clarified WAC-46B-920(2). It says "*All specialties listed in this subsection may perform the electrical work described within their specific specialty as allowed by the occupancy and location described within the specialty's scope of work. Except for Residential (02), the scope of work for these specialties **does not** include plumbing work regulated under chapter 18.106 RCW. See RCW 18.106. for plumbing exceptions for the Residential (02) specialty.* This clarification supports statutory requirements included in 18.27.090. **Only General electrical (01) and Residential (02) electricians may do incidental plumbing work**. The plumbing work must be directly and immediately related to the like in kind replacement of a household appliance that requires limited power and waste/water connections. An electrical trainee must be supervised by a certified electrician while performing plumbing work.

● CONTRACTORS: CHECK YOUR EMPLOYEES CERTIFICATION

To help avoid license and certification citations, contractors should check their employees' certification cards. Expired certificates of competency and trainee certification cards account for a large percentage of citations issued to employers and employees. In order to avoid costly citations, re-testing and late fees associated with expired certificates of competency and trainee cards, contractors should regularly check **all** employees' certification status.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 10** **October 2005**

Interim Rule Revisions Will Be Effective November 25, 2005

The revisions can be viewed at:

http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/RuleDev/.

No changes were made as a result of the public hearing held on September 27th. Electrical contractors and electricians should review the rule changes that will be effective on November 25th. There are substantial additions to what will be exempt from permitting/inspection. There are also many more categories of electrical work that will be allowed to use a Class B ($10) permit and random inspection. Some line voltage and most low voltage installations will qualify for the reduced $10 Class B permit.

Join the Listserve

The Electrical Listserv (*Electrical Program Updates*) is available to everyone with an interest in the electrical industry and the activities of the Electrical Program and Electrical Board. The "Listserv" is the best way to keep current with changes to the electrical requirements in Washington. "Listserv" members receive up to date information via E-mail links and a copy of the monthly *ELECTRICAL CURRENTS* newsletter. The list serve currently has 3,227 informed users. Members may opt out of the "Listserv" at any time. You may join the "Listserv" (Link: "*Get E-mail updates"*) at our Website.

http://www.lni.wa.gov/TradesLicensing/Electrical/default.asp

Ground Rods

Electricians are still cutting off ground rods. The NEC is very specific in the requirement that *"rod and pipe electrodes shall not be less than 8 ft (2.44 m) in length."*

RCW 19.28.111 states: "*It is unlawful for any person, firm, partnership, corporation, or other entity to install or maintain any electrical wiring, appliances, devices, or equipment not in accordance with this chapter*." Cutting off a ground rod is a willful violation of this statute and Electrical Administrators and installers are subject to non-compliance citations for such actions.

NEC 250.53(G) requires that rod and pipe electrodes *"be installed such that at least 2.44 m (8 ft) of length is in contact with the soil. It shall be driven to a depth of not less than 2.44 m (8 ft) except that, where rock bottom is encountered, the electrode shall be driven at an oblique angle not to exceed 45 degrees from the vertical or, where rock bottom is encountered at an angle up to 45 degrees, the electrode shall be permitted to be buried in a trench that is at least 750 mm (30 in.) deep. The upper end of the electrode shall be flush with or below ground level unless the aboveground end and the grounding electrode conductor attachment are protected against physical damage as specified in 250.10*."

All ground rods must be driven to an 8' depth. If the rod **cannot be driven** then it needs to be driven at a 45 degree angle. If that cannot be done, then the ground rod needs to be installed in the bottom of a trench that is not less than 30 inches deep.

The use of short ground rods is considered a serious and gross code violation, and the installer will be subject to citations and possible suspension.

No Screws Through Box

Save yourself the time and expense of a return trip to your jobsite to fix electrical corrections. Our inspectors would like to avoid a re-inspection trip as well. Contractors and installers need to be aware that NEC 314.43 has specific requirements for securing and supporting nonmetallic boxes.

Provisions for support of nonmetallic boxes must be outside of the box, or the box must be constructed to prevent the accidental contact of the conductors in the box and the mounting screws. Manufacturers must construct boxes to these requirements. Installers cannot field modify a nonmetallic box in a difficult mounting situation and drill holes in the sidewalls, ends, or back to secure it with screws from the inside.

● TIA For Swimming Pools Equipotential Bonding Grid

The NFPA has issued a Tentative Interim Agreement (TIA) on NEC Article 680.26(C) and 680.26(C) (1) with an effective date of August 18, 2005.

A Tentative Interim Agreement is tentative because it has not been processed through the entire standards-making procedures. It is interim because it is effective only between editions of the standard. A TIA automatically becomes a proposal of the proponent for the next edition of the standard; as such, it then is subject to all of the procedures of the standards making process. NEC Article 680.26(C) and 680 26(C) (1) has been revised as follows:

(C) Equipotential Bonding Grid. The parts specified in NEC 680.21(B) shall be connected to an Equipotential bonding grid with a solid copper conductor, insulated, covered or bare not smaller than 8 AWG or rigid metal conduit of brass or other identified corrosion resistant metal conduit. Connection shall be made by exothermic welding or by listed pressure connectors or clamps that are labeled for being suitable for the purpose and are of stainless steel, brass, copper, or copper alloy. The Equipotential bonding grid shall conform to the contours of the pool and shall extend within or under paved walking surfaces for 1 m (3 ft) horizontally beyond the inside walls of the pool and shall be permitted to be any of the following: "***Exception****: The Equipotential bonding grid shall not be required to be installed under the bottom of or vertically along the walls of vinyl lined polymer wall, fiberglass composite or other pools constructed of nonconductive materials. Any metal parts of the pool, including metal structural supports, shall be bonded in accordance with 680.26(B). For the purposes of this section, poured concrete, pneumatically applied (sprayed) concrete, and concrete block, with painted or plastered coatings, shall be considered conductive material*."

(1) Structural Reinforcing Steel. "*The structural reinforcing steel of a concrete pool or deck where the reinforcing rods are bonded together by the usual steel tie wires or the equivalent. Where deck reinforcing steel is not an integral part of the pool, the deck reinforcing steel shall be bonded to other parts of the bonding grid using a minimum 8 AWG solid copper conductor. Connection shall be per 280.26(D)."*

The 2005 NEC may imply that any pool without conductive structural reinforcing steel covering the contours of the pool is required to comply with NEC 680.26(C)(3). This would require an expensive alternate grid fabricated of 8 AWG bare solid copper conductors. The Tentative Interim Agreement was issued because there is no technical basis for having a bonding grid below the contours of a non-conductive pool.

● Non-Power Limited Fire Alarm Circuits – No AFCI Or GFCI Protection

NEC 760.21 was revised for the 2005 code. It prohibits supplying a non-power limited fire alarm circuit through a ground fault circuit interrupter or an arc fault circuit interrupter. The intent was to supply NPLFA circuits through a source that is not subject to interruption.

This requirement **does not apply** to single or multiple station smoke alarms. These alarms are not supplied through a non-power limited fire alarm circuit. Smoke alarms in new construction are required by NFPA 72, *National Fire Alarm Code*, to have a back-up battery. In the event that a power outage occurs due to the operation of the AFCI or GFCI or for any other reason, the battery back up will supply power.

● Natural and Artificially Made Bodies of Water

2005 NEC Article 682 is a **new** article covering bodies of water not covered by other articles in the code. Natural bodies of water would be areas such as lakes, ponds, rivers, streams and other naturally occurring bodies of water. Areas such as: aeration ponds, fish farm ponds, storm retention basins, treatment ponds and irrigation (channel) facilities are considered artificially made bodies of water.

Electrical equipment such as pumps, luminaires and their associated supply wiring are frequently installed in these areas. The new requirements are designed to minimize the shock hazards inherent in those wet and damp locations. Safety concepts contained in NEC articles 553, 555, 590 and 680 provided the foundation for article 682.

Article 682.15 states that: "*Fifteen- and 20-ampere single-phase, 125-volt through 250-volt receptacles installed outdoors and in or on floating buildings or structures within the electrical datum plane area that are used for storage, maintenance, or repair where portable electric hand tools, electrical diagnostic equipment, or portable lighting equipment are to be used shall be provided with GFCI protection. The*

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GFCI protection device shall be located not less than 300 mm (12 in.) above the established electrical datum plane."

The definition of electrical datum plane encompasses areas subject to tidal movement and areas in which the water level is affected by conditions such as climate (rain or snowfall) or by human intervention (the opening or closing of dams or floodgates). In either case, the term covers the normal highest water level, such as high tides. The term does not cover extremes due to natural or manmade disasters.

● Electrical Question of the Month

This Month's Question: The job site portion of the label for a Class B installation must include: **A)** Building owner's name, **B)** The job site address, **C)** Date of the work, **D)** Contact telephone number.

Last Month's Question: The minimum size conductor required to connect metal parts of a swimming pool to a common bonding grid shall not be smaller than: **A)** 6 AWG, solid copper, **B)** 6 AWG, stranded copper, **C)** 8 AWG, solid copper, **D)** 8 AWG, stranded copper. The answer is: **C)** [NEC 680.26(C)].

Final Judgments of Electrical Laws
For the 2nd Quarter of 2005

Violator	Penalty
Violation – No Electrical Contractor's License	
Region 1 – North Puget Sound	
ASH ENTERPRISES, 23RD AVE WEST, BRADENTON FL	$ 500
BROCKHAUS, DOUGLAS ALAN, 181ST AVE SE, SNOHOMISH WA	$ 500
CHERRY VALLEY HEATING/COOLING, PO BOX, DUVALL WA	$ 500
DALTON, JAMES LEE, 176TH ST NE, ARLINGTON WA	$ 500
DELTA CONSTRUCTION GROUP LLC, 172ND ST NE, ARLINGTON WA	$ 500
DICKS HEATING & A/C INC, 45TH ST E, SUMNER WA	$ 500
ELITE REMODELING & CONST INC, PO BOX, MONROE WA	$ 500
GRIPP, PAUL, S 4TH AVE, EVERETT WA	$ 4000
J CAT CONSTRUCTION, LOVES HILL DR, SULTAN WA	$ 500
L WIBBLEMAN COMPANY, 132ND ST, SNOHOMISH WA	$ 500
MARTEL WELL DRILLING, PO BOX, FRIDAY HARBOR WA	$ 500
R A CONSTRUCTION INC, SUTTON DRIVE, EVERSON WA	$ 500
RAMPART ENGINEERING, 84TH ST NE, MARYSVILLE WA	$ 500
REED, HERBERT E, PHINNEY AVE N, SEATTLE WA	$ 500
SIMONSON, JEFFREY A, NE 12TH, BELLEVUE WA	$ 500
SMITH, JAMES R, HWY 9, MOUNT VERNON WA	$ 500
TOTAL COMFORT, 147TH ST SE, MONROE WA	$ 500
TOUBY, MIKE, 53RD DR NE, MARYSVILLE WA	$ 500
WEBB, BRIAN, 44TH AVE NW, STANWOOD WA	$ 500
WHITE, BRYCE L, PO BOX, STARTUP WA	$ 500
Region 2 – King County	
ABDON, FELIX E, 47TH AVE E, FIFE WA	$ 500
BAYNE CONSTRUCTION SERVICES, 440TH PL SE, NORTH BEND WA	$ 500
CURTIS LANG CUSTOM HOMES INC, SE 218TH ST, MAPLE VALLEY WA	$ 500
GEARY, JUSTIN THOMAS, 71ST, SEATTLE WA	$ 500
GLENDALE HEATING & A/C, DES MOINES MEMORIAL DR, SEATTLE WA	$ 500
HADDAD, JOSEPH, NE 4TH PL, SAMMAMISH WA	$ 500
INDUSTRIAL EQUIP SOLUTS INC, OLD NACHES HWY, NACHES WA	$ 500
IRONFIRE DESIGN & FABRICATION, NE 126TH PL, KIRKLAND WA	$ 500
LINDSAY, HUNAN EUSTACE, NW 39TH ST, SEATTLE WA	$ 500
MARSHALL, STEVEN M, E 61ST ST, TACOMA WA	$ 500
PINNACLE HEATING & AIR COND, SW 110TH ST, SEATTLE WA	$ 500
ROBERT S SEARLE HM IMPROVEMENT, SUNNYSIDE AVE NE, SEATTLE WA	$ 500
SATELLITE CONNECTION, 180TH PL SW, LYNNWOOD WA	$ 500
SEFNCO INC, PO BOX, BUCKLEY WA	$ 500
SOUND CHOICE BLDRS PLB & HTG, CRESCENT VALLEY DR NW, GIG HARBOR WA	$ 500
SPECTRUM CONSTRUCTION SRVS INC, P O BOX, BELLEVUE WA	$ 500
TACOMA COMMERCIAL MAINT INC, STEILACOOM BLVD SW, LAKEWOOD WA	$ 500
TOTAL ENERGY SERVICES LLC, HARRISON ST, SEATTLE WA	$ 500
UNIQUE RESTORATION ENT LLC, 33RD AVE, SEATTLE WA	$ 500
Region 3 – Pierce & Kitsap County & Olympic Peninsula	
COURT, THOMAS L, 4TH AVE NW, PUYALLUP WA	$ 500
COURTS, LENNY ALANE, 19TH AVE E, TACOMA WA	$ 500
KONECRANES, INC, S 216TH ST, KENT WA	$ 500
LARGE CO LLC, THE, HUDSON AVE NE, POULSBO WA	$ 500

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LOFALL WELL DRILLING, NW LOFALL RD, POULSBO WA	$	500
NORTHWEST COMMERCIAL SERVICE, PO BOX, RENTON WA	$	500
ORCA PACIFIC INC, S 200TH, SEATAC WA	$	500
SECURITY ONE INC, BRIDGEPORT WAY SW, LAKEWOOD WA	$	500
SPENCE, ROBERT L, BERTHA, BREMERTON WA	$	1500
Region 4 – Southwest Washington		
ADAMS, KEITH H, WEST LOCUST AVE, CENTRALIA WA	$	500
AIR PRO HEATING & COOLING, DOUGLAS ST, LONGVIEW WA	$	1000
ALL STAR RENT A FENCE, PO BOX, NAPAVINE WA	$	500
CALVIN BRITTON BUILDER, STEILACOOM RD SE, OLYMPIA WA	$	500
DOYLE BROTHERS CONST INC, PO BOX, ELMA WA	$	500
FONTENOT, ANDREA, STATE AVE NE, OLYMPIA WA	$	500
HARMON, CURT, 136TH E, PUYALLUP WA	$	500
HOPKINS, JAMES, BOX, WINDERMERE BC	$	500
KARDEL, NICHOLAS R, SCHOOLHOUSE RD, FRIDAY HARBOR WA	$	500
METRO OVERHEAD DOOR INC, N LOMBARD ST, PORTLAND OR	$	500
NOLL, DONALD, PO BOX, BELFAIR WA	$	500
O'MEARA, WILLIAM FRANKLIN, NE 87TH, SEATTLE WA	$	500
PORTLAND MECHANICAL CONT INC, SE HANNA HARVESTER DR, MILWAUKIE OR	$	500
RAINIER LIGHTING/ELECT SUPPLY, PO BOX, LAKEWOOD WA	$	500
UNTD FIRE HLTH/SFTY EQ CO INC, NE MARTIN L KING JR BLVD, PORTLAND OR	$	500
Region 5 – Central Washington		
BOUFFIOU, GARY C, 25TH, KENNEWICK WA	$	500
GREENSIDE, DUSTIN JHON, W FREMONT AVE, SELAH WA	$	500
HORSE HEAVEN HTG & COOLING, S WILGUS RD, PROSSER WA	$	500
STOKES, ANTHONY J, WAPATO LK RD, MANSON WA	$	500
VASQUEZ, JOSE, WEST CENTENNIAL, ZILLAH WA	$	500
Region 6 – Eastern Washington		
ANDERSON, GARY D, W WESTBOW BLVD, SPOKANE WA	$	500
BRITTON, JOHN, AZTEC LANE, CHENEY WA	$	500
BYUS, CHRIS, PO BOX, SPOKANE WA	$	500
COUGAR MECHANICAL, INC, PO BOX, SPOKANE WA	$	1000
DAN REED CONSTRUCTION INC, LINDEN DR, LEWISTON ID	$	500
DICKERSON PUMP & IRRIG CO INC, E BROADWAY, SPOKANE WA	$	500
GOODMAN, JEFF W, E BROADWAY, SPOKANE WA	$	500
GRANGE SUPPLY CO INC/PULLMAN, NW STATE ST, PULLMAN WA	$	500
OLIVER, JEREMY J, S CHENEY SPOKANE RD, SPOKANE WA	$	500
PHONE GUY, THE, PO BOX, MOSCOW ID	$	500
SEVEN-UP BOTTLING CO SPOKANE, E MISSION, SPOKANE WA	$	500
VALLEY GLASS, S PINES, SPOKANE WA	$	500
WAYNE'S REFRIGERATION, S MILL, COLFAX WA	$	500
Central Office		
AURORA PLUMBING & ELECTRIC, AURORA AVE N, SEATTLE WA	$	500
BLACKFORD, CHRISTOPHER H, 35TH AVE W, LYNNWOOD WA	$	500
BLAKEY, KEITH, PO BOX, CLINTON WA	$	500
EVANS, ROBERT M, MERIDIAN E, MILTON WA	$	1500
HINES INTERESTS L P, 112TH AVE NE, BELLEVUE WA	$	500
NEON & ELECTRIC SIGNS LLC, 15TH AVE W, SEATTLE WA	$	500
OLSEN, BRETT, PO BOX, AUBURN WA	$	3000
TECTON CORPORATION, INTERURBAN AVE S, TUKWILA WA	$	2000
TELSERVICE NORTHWEST LLC, 172ND AVE SE, AUBURN WA	$	820
Violation – Hiring Uncertified Electricians		
Region 1 – North Puget Sound		
ALLIANCE INTEGRATED SYSTEMS IN, HARWIN, HOUSTON TX	$	100
J CAT CONSTRUCTION, LOVES HILL DR, SULTAN WA	$	100
L WIBBLEMAN COMPANY, 132ND ST, SNOHOMISH WA	$	100
RALPHS WATER PUMP SERV INC, 24TH PL NE, SNOHOMISH WA	$	100
Region 2 – King County		
AUDIO PLUS LLC, N 30TH ST, RENTON WA	$	100
ESP TECHNOLOGIES, SW BURNS WAY, WILSONVILLE OR	$	200
UNIQUE RESTORATION ENT LLC, 33RD AVE, SEATTLE WA	$	100
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
NORTHWEST COMMERCIAL SERVICE, PO BOX, RENTON WA	$	100
ORCA PACIFIC INC, S 200TH, SEATAC WA	$	100
Region 4 – Southwest Washington		
ADT SECURITY SERVICES INC, NORTHCREEK PKWY N, BOTHELL WA	$	500
BLUE MOUNTAIN ELECTRIC, BURRELL AVE, LEWISTON ID	$	100
CHRISTENSON VELAGIO INC, NW THURMAN ST, PORTLAND OR	$	100
VANGUARD WINDOW & ENTRY SYSTEM, PO BOX , SPOKANE WA	$	100
WILCOX ELECTRIC INC, WASHINGTON ST, VANCOUVER WA	$	100

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Region 5 – Central Washington

ALLSTAR ELECTRIC INC, W LINCOLN, YAKIMA WA	$	100

Region 6 – Eastern Washington

DICKERSON PUMP & IRRIG CO INC, E BROADWAY, SPOKANE WA	$	100
ENERGY INDUSTRIES (WA) LLC, 140TH AVE NE, BELLEVUE WA	$	100
GRANGE SUPPLY CO INC/PULLMAN, NW STATE ST, PULLMAN WA	$	100
SEVEN-UP BOTTLING CO SPOKANE, E MISSION, SPOKANE WA	$	100
STREETFIRE ENGINEERING SEC SVC, N HAYE, NEWMAN LAKE WA	$	600
VALLEY GLASS, S PINES, SPOKANE WA	$	100
YOUNG ELECTRIC SIGN CO, E 41ST ST, GARDEN CITY ID	$	100

Central Office

ELMECCO INC, ROOSEVELT WAY NE, SEATTLE WA	$	200
LAD IRRIGATION CO INC, PO BOX, MOSES LAKE WA	$	425
MCCOY ELECTRIC & COMM INC, N MCNEELY ST, BUCKLEY WA	$	50
PACIFIC AIR SYSTEMS, SD 112TH ST, TACOMA WA	$	700
PUYALLUP HEATING & A/C, 15TH ST SE, PUYALLUP WA	$	300
WENATCHEE ALARM/SEC SRVCS INC, N WENATCHEE AVE, WENATCHEE WA	$	250

Violation – Uncertified Electrician

Region 1 – North Puget Sound

AHO, WAYNE, PO BOX, GARDEN VALLEY ID	$	250
BOWER, MICHAEL LEE, 16TH ST NE, LAKE STEVENS WA	$	250
BRADFORD, MARCUS D, PO BOX, SEDRO WOOLLEY WA	$	250
BROCKHAUS, DOUGLAS ALAN, 181ST AVE SE, SNOHOMISH WA	$	250
GRIPP, PAUL, S 4TH AVE, EVERETT WA	$	2000
HARE, JOHN, 23RD AVE WEST, BRADENTON FL	$	250
MARIN, RICHARD JR, SUTTON DR, EVERSON WA	$	250
MARTEL, DANIEL DENNIS, BAILER HILL RD, FRIDAY HARBOR WA	$	250
MESNEAK, ROBERT M, COLLEENS LN SE, MONROE WA	$	250
RAMEY, SHANNON D, 84TH ST NE, MARYSVILLE WA	$	250
REED, HERBERT E, PHINNEY AVE N, SEATTLE WA	$	250
REPP, THOMAS J, 24TH PL NE, SNOHOMISH WA	$	250
SIMONSON, JEFFREY A, NE 12TH, BELLEVUE WA	$	250
STRICKLAND, JOE, PO BOX, MONROE WA	$	250
TALLEY, ALBERT C, LOVES HILL RD, SULTAN WA	$	250
WEBB, BRIAN, 44TH AVE NW, STANWOOD WA	$	250

Region 2 – King County

BAYNE, MARC, 440TH PL SE, NORTH BEND WA	$	250
BOSLEY, DERRICK CLAYTON, SEWARD PARK AVE S , SEATTLE WA	$	250
BUENO, JAVIER, 112TH ST E, BUCKLEY WA	$	250
COOK, JOEL S, PO BOX, MCKENNA WA	$	250
ELLIS, DAVID, SIDNEY RD SW, PORT ORCHARD WA	$	250
KNAPPERT, JEREMY, BOTHELL EVERETT HWY, BOTHELL WA	$	250
LORS, MARIN, 12TH PL S, BURIEN WA	$	250
SCHWINCK, RYAN DEAN, SW 331ST PL, FEDERAL WAY WA	$	250
WISE, ERIC NATHAN, SR 92, LAKE STEVENS WA	$	250

Region 3 – Pierce & Kitsap County & Olympic Peninsula

CAMPBELL, SCOTT, SOUTH MASON AVE, TACOMA WA	$	250
COURT, THOMAS L, 4TH AVE NW, PUYALLUP WA	$	250
COURTS, THOMAS L, FOREST RIM CT N, PUYALLUP WA	$	500
EARL, NATHAN J, SW 16TH PL, FEDERAL WAY WA	$	250
RICHARDSON, JEFFREY M, FRENDER LN, SEABECK WA	$	250

Region 4 – Southwest Washington

ARVIN, JEFFREY L, NE HOOD ST, HILLSBORO OR	$	250
BARCKLEY, MICHAEL JORDON, TRAILS END DR SE, OLYMPIA WA	$	250
BRITTON, CALVIN, STEILACOOM RD SE, OLYMPIA WA	$	250
BROWN, AARON, E REID CT, LA CENTER WA	$	250
FONTENOT, ANDREA, STATE AVE NE, OLYMPIA WA	$	250
FOSS, DON, PO BOX, NAPAVINE WA	$	250
HARMON, CURT, 136TH E, PUYALLUP WA	$	250
HOPKINS, JAMES, PO BOX, WINDERMERE BC	$	250
JARVIS, KEN, 116TH AVE CT E, PUYALLUP WA	$	250
JINES, STEVEN, N 3RD ST, ELMA WA	$	250
KARDEL, NICHOLAS R, SCHOOLHOUSE RD, FRIDAY HARBOR WA	$	100
NOLL, DONALD, PO BOX, BELFAIR WA	$	250
PATTISON, CORY, FLORIDA ST, LONGVIEW WA	$	250
SCHOSTEK, MICHAEL P, SE MACDUFFEE CT, PORTLAND OR	$	250
TRACEWELL, THOMAS, PO BOX, LAKEWOOD WA	$	250
WOOLEY, MICHAEL A, SE STEELE, PORTLAND OR	$	250

Region 5 – Central Washington

RAMOS, ISRAEL J, PO BOX, ZILLAH WA	$	250

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Region 6 – Eastern Washington

ADAMS, BILL, E WINGER, MEAD WA	$	250
ATHA, RICH, FLAGSTAFF, RATHDRUM ID	$	250
BOYD, CHAD, STALEY RD, PULLMAN WA	$	250
NUXOLL, JOSEPH C, P O BOX , COTTONWOOD ID	$	250
OLIVER, JEREMY J, S CHENEY SPOKANE RD, SPOKANE WA	$	250
PELKEY, RANDY S, N ISABELLA, COEUR D'ALENE ID	$	250
SOUTHWICK, KEVAN E, N RODENBOUGH LN, SEATTLE WA	$	250

Central Office

BAUGHN, NICHOLAS, 159TH ST, TACOMA WA	$	125
BLAKEY, KEITH, PO BOX, CLINTON WA	$	250
BURTON, MICHAEL W, PO BOX, VANCOUVER WA	$	500
CARRIER, BRINT J, W SKAGIT, KENNEWICK WA	$	200
COLLINS, SHAUN, 16TH AVE SE, MILL CREEK WA	$	100
DANIELS, GERALD, 172ND AVE. SE, AUBURN WA	$	1250
DAVIS, WILLIE, 48TH ST, UNIVERSITY PLACE WA	$	250
DELANO, STANLEY, 70TH AVE WEST, TACOMA WA	$	250
HANSON, TODD R, PO BOX, VANCOUVER WA	$	500
HIETER, MATT L, PO BOX, VANCOUVER WA	$	500
HUSTON, RICKEY L, KELLY RD NE, CARNATION WA	$	250
JONES, KEVIN G, KNOWLES RD, WENATCHEE WA	$	250
KELLY, SEAN T, NE 10 WAY, VANCOUVER WA	$	100
MELVILLE, DEAN A, 111TH ST S, TACOMA WA	$	500
MUNZ, KRISTOPHER R, 159TH ST CT E, TACOMA WA	$	100
OWENS, JOHN C, PO BOX, VANCOUVER WA	$	500
PRATT, SHAWN, NE 30TH AVE, SEATTLE WA	$	200
ROBERTS, ANTHONY, AMHERST ST, FIRCREST WA	$	625
RODEBERG, JASON, S JUNETT ST, TACOMA WA	$	125
SEE BECK, BRIAN, S 39TH ST, TACOMA WA	$	125
SHERMAN, MATTHEW, 92ND ST E, SUMNER WA	$	100
SMITH, MICHAEL D, 122ND ST E, PUYALLUP WA	$	125
SMITH, MISANO A, 121ST ST E, PUYALLUP WA	$	750
SPENCER, DAVID D, PO BOX, VANCOUVER WA	$	500
TENNYSON, JASON, 10TH AVE S, SPANAWAY WA	$	50
TOWNSELL, JERRY, PO BOX, VANCOUVER WA	$	500
YOUNG, TOM I, 68TH AVE CT E, PUYALLUP WA	$	750
ZABROCKI, DAVID J, N WENATCHEE AVE, WENATCHEE WA	$	250

Violation – No Electrical Work Permit

Region 1 – North Puget Sound

AGAPE ELECTRIC INC, 200TH ST SE, SNOHOMISH WA	$	250
ALL AMERICAN HEATING INC, 180TH ST SE, SNOHOMISH WA	$	1000
ALLIANCE INTEGRATED SYSTEMS IN, HARWIN, HOUSTON TX	$	250
ASH ENTERPRISES, 23RD AVE WEST, BRADENTON FL	$	250
ASSOCIATED HTG/SHEET METAL INC, PO BOX, MONROE WA	$	2000
BAER, JON R, BOTHELL EVERETT HWY, BOTHELL WA	$	250
BROCKHAUS, DOUGLAS ALAN, 181ST AVE SE, SNOHOMISH WA	$	250
BROOK & COMPANY, 218TH ST SW, EDMONDS WA	$	250
BRUCE SMITH HTG & COOLING INC, 44TH AVE W, LYNNWOOD WA	$	1000
BURGLAR STOP USA, H ST, BLAINE WA	$	250
CLEMENTS, JOE, 78TH PL W, EDMONDS WA	$	250
CREATIVE ELECTRIC, P O BOX, MOUNT VERNON WA	$	250
DAY & NITE PLUMBING & HTG INC, 13TH AVE W, LYNNWOOD WA	$	1000
DECO ELECTRIC INC, 149TH PL SE, BELLEVUE WA	$	250
DONNELSON ELECTRIC INC, S OLYMPIC, ARLINGTON WA	$	250
EAST SERVICE ELECTRIC INC, 158TH AVE NE, WOODINVILLE WA	$	250
FERRIN ELECTRIC INC, PO BOX, MILL CREEK WA	$	1000
KAMINSKI, PAT, PO BOX, ARLINGTON WA	$	250
KERN, DAN, 230TH ST SE, MONROE WA	$	250
KIM, KWAN, 179TH ST SW, LYNNWOOD WA	$	500
KNODEL, KEVIN, 69TH AVE NE, MARYSVILLE WA	$	250
LINDAS 4 PAW SPA, SUNNYSIDE BLVD, EVERETT WA	$	250
LONDON CONTROLS INC, ROOSEVELT WAY NE, SEATTLE WA	$	250
MARXEN, THOMAS, E LK SAMMAMISH SHR LN NE, SAMMAMISH WA	$	250
MERIT MECHANICAL INC, 153RD AVE NE, REDMOND WA	$	1000
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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 9** **September 2005**

Cooperation Works In Combating The Underground Economy

Phil Zumbro, L&I electrical inspector, received a tip from an electrical contractor that a person might be doing electrical work without a valid electrical contractor's license. The homeowner told the legitimate electrical contractor he lost the job "because his price was too high."

On a Saturday, Inspector Zumbro drove by the jobsite and saw a van containing electrical material parked at the home. He left the area and shortly returned with his state vehicle and identification. He found a man doing electrical work who did not have an electrical contractor's license. Inspector Zumbro issued him an electrical citation for failing to be a licensed electrical contractor. The citation was not appealed, the citation has become a final judgment and the man was assessed a penalty of $500.

Inspector Zumbro, Chief Fuller

Inspector Zumbro found the van belonged to the offender's normal employer, another electrical contractor. He was using a company van without his boss's permission. His use of his employer's van created liability concerns for his boss and damaged the trust between him and his boss.

The legitimate electrical contractor saw the value of his cooperation and wrote a very complimentary letter for Inspector Zumbro thanking him for his willingness to follow up and take the appropriate action in this case. The willingness of the honest electrical contractor to work with L&I in its efforts to combat the underground economy and level the competitive playing field for legitimate contractors is greatly valued. Electricians should think twice before competing illegally with electrical contractors who follow the law.

NOTICE!! Public Hearing For Interim Rule Revisions September 27, 2005

These proposed revisions have a target effective date of November 18, 2005. Proposed revisions can be viewed at: http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/RuleDev/.

Copies of the proposed rules will also be available at the **public hearing on September 27, 2005, at 9:00 AM; Labor and Industries Building, Room S119/S118; 7273 Linderson Way, Tumwater.** If you are unable to attend, we must receive written, E-mailed, or faxed comments no later than 5:00 PM on September 27, 2005. This address is: Specialty Compliance Services Division, Attention Sally Elliott, PO Box 44400, Olympia, WA 98504-4400; E-mail: yous235@lni.wa.gov; Fax: (360) 902-5292.

Temporary Services — When To Take Them Out Of Service

The rough use conditions of a construction site typically results in some damage to temporary service equipment. It is the owner's or contractor's responsibility to ensure that damaged equipment is repaired and in safe working condition before relocating it and requesting that it be inspected. Our inspectors have encountered equipment during inspections with broken breaker handles, over-fused conductors or receptacles, missing knock-outs, missing dead fronts, missing covers, cracked weather-heads, obvious water damage, and even with insect or bird nests inside. You may be subject to additional fees if you submit damaged equipment as "ready for inspection." If damaged equipment cannot be repaired to its original safe operating condition, it should be taken out of service and scrapped.

Not All Inspectors Are Available For Phone Calls In The Morning

With the recent workload increase many inspectors will not be available to answer phone calls in the morning. In an effort to get the most efficiency from our limited inspection resources, some of our inspectors go directly to the field and are not in the office at all. You should leave your questions on the inspector's voicemail and a lead inspector or supervisor will call you back; this way an arrangement can still be made to provide access for inspections. The department's inspectors will continue to make every possible effort to accommodate the electrical contractor's schedule.

Master Electrician Grandfathering Period Over—No Exceptions

July 1, 2005 was the last opportunity for qualifying existing certified electricians to obtain master electrician status without examination. Since this date, the department has received letters and phone calls from individuals wanting to convert their current certifications to master status. The department can not accept any applications or entertain any requests to re-open the grandfathering period. To take the master electrician or master specialty electrician examination an application must be filled out and submitted to the department for approval. The application is available at:
http://www.lni.wa.gov/TradesLicensing/Electrical/FormPub/Forms/

Proper Identification And Use of Tamper Resistant Receptacles

Tamper Resistant Receptacles are identified by the words "Tamper Resistant" or the letters "TR" where they will be visible after installation with the cover plate removed. Tamper-resistant receptacles may be of the general grade, hospital grade, or isolated ground type. The receptacle has an internal mechanism that prevents the insertion of inappropriate objects.

The 2005 NEC 517.18(C) states: **"Pediatric Locations.** *Receptacles located within the rooms, bathrooms, playrooms, activity rooms, and patient care areas of pediatric wards shall be listed tamper resistant or shall employ a listed tamper resistant cover."* This article was revised from the 2002 Code to cover **all** receptacles installed in the patient care areas of pediatric locations. The use of locking covers or plastic safety inserts over receptacles do not meet this requirement.

WAC 296-46B-010(18) states: "*Listed tamper-resistant receptacles or listed tamper-resistant receptacle cover plates are required in all licensed day care centers, all licensed children group care facilities and psychiatric patient care facilities where accessible to children five years of age and under. Listed tamper-resistant receptacles are required in psychiatric patient care facilities where accessible to psychiatric patients over five years of age*." Children over 5 years old in psychiatric patient care facilities can be destructive. Only listed tamper resistant receptacles are acceptable in these areas, not cover plates.

Photovoltaic Installations

Recent advances in technology are resulting in the increased interest in installing photovoltaic (PV) systems. New or improved products provide more opportunities for integrating PV systems into residential and commercial buildings. These systems typically must be installed by licensed 01 or 02 electrical contractors employing certified electricians. We have recently received inquiries about whether 06-limited energy electricians are able to install, service, or maintain solar photovoltaic systems.

Limited energy electricians can only service or install the low voltage portion of photovoltaic systems that are rated at or below 30 volts and 1,000 volt-amperes. This specialty is limited to installations of "low voltage" circuits and equipment. WAC 296 46B 020(42) defines "low voltage" as Class 1 power limited circuits at 30 volts maximum, and Class 2 and Class 3 circuits per NEC 725. NEC 725-21(A) restricts Class 1 Power-Limited Circuits to a maximum of 1,000 volt-amperes.

When customers have **interactive systems** (NEC 690.2), utilities are necessarily concerned about the safety of line workers trying to restore power to the utility grid during outages. When utility power is lost, the PV system may be producing power that can be fed back into the utility-distribution system. Listing of PV systems and equipment by an electrical testing laboratory accredited in Washington ensures the requirements of NEC 690.61 (i.e. de-energize inverter output to the utility electrical production and distribution network on loss of utility voltage) are met. A properly listed solar PV system will allow operation as a stand-alone system to supply loads that have been disconnected from the utility distribution. Unlisted PV system equipment is not acceptable in any solar photovoltaic installation.

Electrical Question of the Month

This Month's Question: The minimum size conductor required to connect metal parts of a swimming pool to a common bonding grid shall not be smaller than **A)** 6 AWG, solid copper, **B)** 6 AWG, stranded copper, **C)** 8 AWG, solid copper, **D)** 8 AWG, stranded copper.

Last Month's Question: Type THW copper conductors for a 3-wire, single phase dwelling service rated at 100 amperes shall not be less than: **A)** 6 AWG, **B)** 4 AWG, **C)** 3 AWG, **D)** 2 AWG.
The answer is **B)** [NEC Table 310.15(B)(6)].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 8** **August 2005**

Public Hearing For Interim Rule Revisions

The department has initiated an interim rule revision cycle to expand Class A and Class B basic electrical work to help accommodate the business needs of our customers and to better utilize our inspection resources. The revisions also clarify limitations of electrical specialties allowed to do incidental plumbing connections. These proposed revisions have a target effective date of November 18, 2005. Proposed revisions can be viewed at: http://www.lni.wa.gov/TradesLicensing/Electrical/LawRulePol/RuleDev/.

Copies of the proposed rules will also be available at the **public hearing on September 27, 2005, at 9:00 AM; Labor and Industries Building, Room S119/S118; 7273 Linderson Way, Tumwater.** If you are unable to attend, we must receive written, E-mailed, or faxed comments no later than 5:00 PM on September 27, 2005. This address is: Specialty Compliance Services Division, Attention Sally Elliott, PO Box 44400, Olympia, WA 98504-4400; E-mail: yous235@lni.wa.gov; Fax: (360) 902-5292.

We Are Recruiting for Electrical Inspectors, Leads, Supervisors, and Electrical Compliance Officers

A recruitment notice has been mailed to all qualified journeyman electricians in Washington and posted on several national recruitment websites for the positions of Electrical Inspector, Inspector Lead, Supervisor, and Fraud Team. To apply for these positions, complete go to:

http://www.lni.wa.gov/Main/FindAJob/default.asp

There is an immediate need for lead level Fraud Team members performing electrical job site compliance, database investigations, and developing relationship networks for the L&I fraud prevention initiative. Fraud Team members will be hired at the lead level ($4,460 - $5,175 month, Range 60E).

Anyone interested in applying for the other recruited positions should submit an application as soon as possible. This is your chance to make a difference in the electrical industry. Washington has excellent career opportunities, benefits, and a stable work environment. We welcome your applications. If you have any specific questions, please email them to: Jobs@lni.wa.gov

Field Cutting Of Rope Lights, Not Allowed

Flexible lighting systems intended for decorative lighting, outline lighting and similar installations were introduced as an alternative to traditional incandescent lighting more than 30 years ago. The flexible lighting system, better known as rope lights, was manufactured to a standard that allowed for the cutting and termination custom lengths in the field. The standard allowed this with the intention it would be done by an electrician or qualified person. Increased popularity with homeowners and do-it yourselfers resulted in product failures and safety problems, so the ANSI/UL Standard for Flexible Lighting Products—UL 2388 was updated.

The revised standard was effective November 3, 2003. A significant change in the standard is the prohibition of lamp shunts and the cutting of the rope light in the field. In addition, flexible lighting products cannot be permanently secured to a building or similar structure. Rope lights manufactured before November 3, 2003 may still be installed per the original manufacturer's instructions to allow field cutting, but it is unlikely that stock from 2003 is still available. If you are using the rescinded installation methods, you should be prepared to document the date of manufacture of the flexible lighting product and provide a copy of the manufacturer's installation instructions.

NM Cable Must Be Installed In A Dry Environment

Article 334.10(A) of the National Electrical Code allows the use of type NM cable "*For both exposed and concealed work in normally dry locations*". NEC 334.12(B)(4) specifically prohibits the use of type NM cable "*Where subject to excessive moisture or dampness*".

When subject to rain in the construction environment, water during fire-fighting operations, or flooding, does non-metallic sheathed cable (type NM) need to be replaced following exposure to water?

The 2001 National Electrical Manufacturers Association (NEMA) publication Guidelines for Handling Water Damaged Electrical Equipment says, "*Any wire or cable that is listed for dry locations only, such as type NM-B cable, should be replaced if it has been exposed to water. Any cable that contains fillers, such as polypropylene, paper, etc., should be replaced if the ends of the product have been exposed to water. When any wire or cable product is exposed to water, any metallic component (such as the conductor, metallic shield, or armor) is subject to corrosion that can damage the component itself and/or cause termination failures*."

When a Type NM-B cable end has been exposed to water, water is wicked into the jacket of the cable. Wire and cable that is listed only for dry locations may become a shock hazard, when energized, after being exposed to water. On a case by case basis, we will consider these NEMA guidelines as manufacturer's installation instructions when making decisions that may require cable replacement.

● Ensure Equipment Can Be Approved For Use And Do It Early In The Job Schedule.

WAC 296-46B-010 (9) states, "*In order to meet the minimum electrical safety standards for installations, all materials, devices, appliances, and equipment, not exempted in chapter 19.28 RCW, must conform to applicable standards recognized by the department, be listed, or field evaluated*." And, "*… equipment must not be energized until such standards are met unless specific permission has been granted by the chief electrical inspector*." Contractors often fail to inform their customers of this requirement until the job is nearly completed, or they let the inspector give the "bad news" to the customer when the equipment is placed. Always research the equipment a customer intends to use prior to the installation and avoid costly evaluations and delays.

If equipment is not properly listed and labeled, then it must be field evaluated. Qualified industrial equipment, WAC 296-46B-030(1), is eligible for department evaluation. The department evaluation process is detailed in WAC 296-46B-030(2) and requires specific documentation of the manufacturing standards and intended use from the equipment manufacturer and equipment owner. For additional information on department evaluations you may contact David Myers at (360) 902-5967. Accredited testing laboratories are shown at: http://www.lni.wa.gov/TradesLicensing/Electrical/ProdTest/

● Wiring Methods In Health Care Facilities And Patient Care Areas

NEC 517.13 requires specific wiring methods for patient care areas (i.e. insulated copper conductor, metal raceway, hospital grade MC, or AC cables, etc.). The governing body of a facility must designate these areas in accordance with the type of patient care anticipated to be provided in the facility. WAC 296-46B-010(14)(c) refers to health or personal care occupancies in buildings or parts of buildings that are likely to contain "patient care areas" in which patients, who may be unable to provide for their own needs and safety without the assistance of another person, are treated. These individuals may come in contact with ordinary electrical appliances, connected to electro-medical devices, or subjected to invasive procedures.

It was not the intent of the NEC Code Panel 15 to include such facilities as gymnasiums or health clubs in the scope of NEC Article 517. If there is some question as to whether a facility is a "health care facility" with "patient care areas", then the governing body of the facility is responsible for the designation of these areas. This should be done in consultation with medical and engineering staff taking into consideration the conditions and practices of the facility. While this places responsibility on the facility, it also provides the facility with an opportunity to safeguard its own operations, rather than leaving designations to an outside agency. If the health or personal care status of a facility is questioned, the governing body may be asked to provide documentation stating the anticipated and intended care or services to be provided.

● Electrical Question of the Month

This Month's Question: Type THW copper conductors for a 3-wire, single phase dwelling service rated at 100 amperes shall not be less than: **A)** 6 AWG **B)** 4 AWG **C)** 3 AWG **D)** 2 AWG

Last Month's Question: A raceway is installed through an area with an ambient temperature of 46 degrees Celsius. The raceway contains the following circuits, nine current carrying conductors and an equipment grounding conductor. The conductors are all #10 THW copper. What is the allowable ampacity for these conductors? **A)** 13.1 amps, **B)** 17.5 amps, **C)** 18.4 amps, **D)** 24.5 amps
The answer is: **C)** [NEC Table 310.16, #10 THW copper = 35 amps, 46ºC ambient = .75 factor; NEC Table 310.15(B)(2)(a), 9 current carrying conductors = .70 factor; 35 amps X .75 X .70 = 18.4 amps]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 7** **July 2005**

Electrical Compliance Officers Needed

Three new electrical compliance positions have been created. The department is looking for qualified individuals to fill those positions. They were added to the Governor's budget as part of an anti-fraud package on the heels of a very successful Electrical Program sponsored pilot called SAFES (Strategic Action for Electrical Safety). The SAFES compliance pilot project started in April of 2004 and lasted approximately six months. During this time the four member team issued many electrical citations in an attempt to combat the underground economy and level the competitive playing field.

The positions will have the equivalence of a Construction Electrical Inspector Lead and will be located in Vancouver, Tukwila and Spokane. Applicants must show a strong desire to enforce the laws and rules of the State of Washington as they pertain to the electrical industry.

Instructions on how to apply for these positions, including the minimum qualifications to apply, will be sent out on the Electrical Listserve and posted on the Electrical Program website this month. The Electrical Program plans to have these positions filled by September. In addition there will be a general recruitment announcement at the same time for electrical inspectors. Due to the new bargaining agreements effective July 1, 2005, applying for an electrical inspector positions has changed significantly. To join the Electrical Listserve follow the instructions at the link below.

http://www.lni.wa.gov/Main/Listservs/Electrical.asp

Hazardous Conditions on the Inspection Site

The permit holder must make the electrical inspector aware of any potential physical or health hazards prior to the inspection being performed. Recently an electrical inspection was requested at a jobsite and when the inspector entered the building he was met by an individual wearing a contamination suit and respirator while removing asbestos in the home. The outside of the jobsite was not marked as to the hazard and the inspector was not made aware by the electrical contractor at the time of the request.

The permit holder must have all hazard(s) clearly marked or make the inspector or supervisor aware of the hazard prior to the inspection. Hazards may include: dangerous chemicals stored in the area to be inspected, structural damage to the building, loose pets, etc.

New WAC Rules Available Online

The current adopted Washington Administrative Code, WAC 296-46B, went into effect June 30, 2005 and is available in Adobe Acrobat .PDF format at the website below. The current Revised Code of Washington, RCW 19.28, is also available at the website. Due to cost cutting measures in government copies of the rules will not be sent out as in previous years. Paper copies will be available at the local offices as soon as our print order is processed. A fee of $5 per copy will be charged.

http://www.lni.wa.gov/TradesLicensing/Rules/ByTrade/Electrical/

Effective Date of the 2005 National Electrical Code—June 30, 2005

The revisions to WAC 296-46B that were started last September became effective June 30, 2005. The 2005 version of the National Electrical Code (NEC) is formally adopted in Washington by these rules. Electrical permits purchased after the WAC effective date will be inspected under the 2005 NEC. Plan review projects received and **accepted for review** after the effective date will be under the 2005 NEC. Permits purchased prior to July 1, 2005 may conform to either the 2002 NEC or 2005 NEC, but **not** a combination of the two standards

Electrical Certification Exams and the 2005 National Electrical Code

When a new version of the NEC is adopted, we always receive a large number of queries from experienced trainees and other exam candidates anxious about when the exams will be updated to the new Code. Electrical examinations will be updated and based on the 2005 NEC later this summer or

early fall. Very few questions will be affected by the change in code versions. Our exam questions are based on basic safety, Code, and theory fundamentals that rarely change with a new NEC edition. When the exam revision date is set it will be announced in this newsletter and on the *Washington State Electrical Program Updates* (Electrical Listserv) automatic E-mail system. All electrical contractors, administrators, electricians, and other industry stakeholders should subscribe to this service at:

http://www.lni.wa.gov/Main/Listservs/Electrical.asp

● Optional Standby Systems—Manual Transfer Switch Installation Requirements

As computers become more integrated into our daily working and home lives, individuals are finding it desirable to install small back-up power systems. The typical and most affordable system is a small, portable generator used with a 4-10 circuit Manual Transfer Switch. Installed properly, this system can operate safely and not cause hazardous failures like: simultaneous connection of power sources, back-feed of dangerous voltages onto utility conductors, or conductor and generator overloading. Back-feed and simultaneous connection safeguards are inherent in properly listed Manual Transfer Switch products.

Overloading becomes a possibility when the installer determines the circuits to wire to the transfer switch, or the end-user determines which circuits are switched to generator power and operated at the same time. Manufacturer's instructions like: "*Determine which circuits will be used during an emergency. If a selected circuit is part of a multi-wire branch circuit, ensure the other branch circuit that shares the neutral is also connected to the transfer switch. The two circuits must be connected to opposing legs (phases) of the generator power and a handle tie must be installed on the switch handles so that both legs are transferred at the same time.*" must be followed. The operating loads must be balanced on each "phase" of the generator output. Manufacturers typically provide appliance running and starting load tables or install watt meters to ensure this is done. Use appropriate equipment for these installations.

● Identification of Listed Swimming Pool Pumps

WAC 296-46B-680 requires that all field installed pool pumps be listed as a "swimming pool pump" or a "swimming pool/spa pump." Additionally field installed pool heaters must meet the listing requirement as a "swimming pool heater" or "spa heater."

As installers and regulators we could assume very easily that the label would be required to be located on the motor of the pump. The listing requirement for the pool pump is **as an assembly.** The label, verifying the listing, may be located anywhere on the pump assembly.

● Preview 2005 NEC Code Changes – 240.21(B) and 240.21(C) New Limits For Sizing Feeder Tap Conductors And Transformer Secondary Conductors

Changes to NEC 240.21(B) and (C) contain new language making it clear that designers and installers are not allowed to apply the "round-up" rule in NEC 240.21(B) to tap conductors or transformer secondary conductors when the conductor ampacity does not match the rating of the circuit overcurrent protection device. The ampacity of the tap or transformer secondary conductors must not be less than the rating of the overcurrent protection.

● Electrical Question of the Month

This Month's Question: A raceway is installed through an area with an ambient temperature of 46 degrees Celsius. The raceway contains the following circuits, nine current carrying conductors and an equipment grounding conductor. The conductors are all #10 THW copper. What is the allowable ampacity for these conductors?
A) 13.1 amps, **B)** 17.5 amps, **C)** 18.4 amps, **D)** 24.5 amps

Last Month's Question: Electricity cost 13 cents per kilowatt hour. Ten metal halide high bay lights draw 2 amps each at 240 volts for 12 hours a day 5 days a week. How much will these lights cost in a four week period?
A) $419, **B)** $150, **C)** $105, **D)** $210
[The answer is B. (10 luminaires X 2 amps X 240 volts) /1000 = 4.8 KW; (5 days/week X 4 weeks X 12 hours/day) = 240 hours; (4.8 KW X 240 hours) = 1152 KWH; (1152 KWH X .13 $/KWH) = $149.76].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 6** **June 2005**

LAST CHANCE! "Grandfathering" Experience For Appliance Repair Certification

As of June 30, 2005, a revision to WAC 296-46B-950 will allow individuals, who have not previously held a temporary 07D electrician certificate, a final opportunity to use previous experience to qualify for the 07D appliance repair specialty electrician certification examination. Experience obtained without possessing a training certificate or working under the supervision of a certified 07D appliance repair specialty electrician may be "grandfathered" for performing appliance repair-type work. There is no window for any other specialty or any type of administrator during this process.

From June 30, 2005 to June 30, 2006 only, applications will be available on the "Forms and Publications" page of our Web site and accepted if the individual submits all of the following:

- An APPLICATION FOR TEMPORARY APPLIANCE REPAIR SPECIALTY ELECTRICIAN PERMIT (Valid as allowed and described in WAC 296-46B-940(28)). The fee is $99.00. ($23.90 in nonrefundable after the application for the original specialty electrician certificate is submitted.) ($52.70 is nonrefundable after the temporary permit is issued.) A separate $50.00 fee for the examination is paid directly to the exam contractor when scheduling the examination.
- A notarized verification letter from the individual's employer(s) documenting:
  - The work was in the appliance repair specialty scope of work [as described in WAC 296-46B-920(2)(k)]. The employer must have been in the business of appliance repair work during the entire verification period and must establish legal business status during this time with copies of their business license or RCW 18.27 contractor registration. Sole proprietors with one year (2,000 hours) of the above business documentation and experience may verify their own experience;
  - The specific date time period for which credit is being sought; and
  - The number of previous work experience hours for which credit is being sought. (Coincidental experience previously claimed in another specialty for the same time period, will not be allowed.)

Individuals credited with the minimum 2,000 hours of previous work experience will be eligible for a temporary specialty electrician permit for the purposes of working without supervision and for supervising trainees in the appliance repair specialty. **The temporary permit will be valid for a period of 12 months** or until the individual has passed the appliance repair examination, whichever comes first. If the individual does not successfully complete the exam in the 12-month period, they must obtain a training certificate and work under supervision to continue performing appliance repair.

Lineman Position Added To The Electrical Board

House Bill 1557 expanded the membership of the Electrical Board to 15 members by adding a **lineman position** and was signed by Governor Gregoire on May 4, 2005. The effective date of the bill is July 24, 2005 and the governor must appoint an individual to the position within 90 days of the effective date. The governor's office has requested that all applications for this position be received **no later than June 30, 2005**. Any applicants that meet the qualifications are encouraged to apply for the position. For additional information on the Electrical Board please visit the website below.

http://www.lni.wa.gov/TradesLicensing/Electrical/ElecBoard/

Applications must be made using the *Application For Gubernatorial Appointment To A Board Or Commission* form. Applicants must submit a letter of interest, completed application form (link below), and current resume. Originals must be sent to the Office of the Governor, PO Box 40002, Olympia, WA 98504-0002 and a copy to the Chief Electrical Inspector, PO Box 44460, Olympia WA 98504-4460, no later than June 30, 2005. Any application received after that date will not be considered. Applicants should be prepared to demonstrate support from any group(s) or associations in the electrical industry that the position represents. Requests for copies of the application and any questions may be directed to Angie Wharton at (360) 902-5259 or downloaded at:

http://www.governor.wa.gov/boards/application/default.asp

Important Change In Electrical Permitting Process

Significant change has taken place in the way the department processes and assigns numbers to electrical permits. We have discontinued use of the pre-printed, multi-color permit application forms. **Without exception, the pre-printed permit applications are no longer being accepted**. Any of the old forms received will be returned to the sender with a new form to be completed and returned. An electrical permit will not be valid until the new form has been completed, received, and assigned a valid permit number in the department's database. If you do not have an electronic number assigned to your permit, you do not have a valid permit, and you may be subject to a citation.

The new forms utilize specific line-item fees for each aspect of the job to accurately describe the work that is being performed. This will speed up the processing of the application and will help the inspector to identify the scope of work the electrical contractor or homeowner intends to perform on the jobsite. If any contractors have any of the old pre-printed, multi-color permit applications in the office or in their service trucks, they should be discarded immediately to eliminate the chance of accidental use.

Reminder: Submit WAC Rule Revision Proposals July 1 through July 15

Revision proposals for the next cycle will be accepted from July 1, 2005 through July 15, 2005. Any proposals received before or after that date will be discarded. The form will be available on the Labor and Industries website (below) on June 20th and must be submitted electronically. See the March 2005 special edition *Electrical Currents* newsletter for details on all aspects of the rule revision process. Please contact the electrical program at (360) 902-5269 with any questions.

www.lni.wa.gov/TradesLicensing/Electrical

Access For Hydromassage Tub Equipment Must Be Provided

NEC 680.73 states that "*Hydromassage bathtub electrical equipment shall be accessible without damaging the buildings structure or building finish.*" There have been a significant number of corrections written for this code violation. All electric motors or pumps eventually require servicing. The size of the access is typically stated on the manufactures installation requirements. If the installation requirements are not present the access must be large enough to remove and replace the largest piece of electrical equipment without causing damage.

Disconnection of the plumbing and wastewater connections and removal of the entire tub from its mounting does not constitute the type of access to the electrical equipment required by the NEC. It is the responsibility of the electrical contractor to communicate this requirement to the general contractor so appropriate framing modifications, access panels, or building finish modifications can be planned and identified for the electrical inspector at the time of inspection. This is an electrical correction and the electrical contractor is responsible for the corrections and any necessary trip fees.

Warning's Will Be Issued For Fee Dues

Due to the increasing amount of fee dues the department has had to process in the recent months, written warnings will be issued to the electrical contractors and the assigned administrator/master electrician for work not included on the permit. Fee dues take a significant amount of an inspector's time to process. It is the responsibility of the administrator to ensure that the complete scope of the work is included with the purchase of the permit.

Electrical Question of the Month

This Month's Question: Electricity cost 13 cents per kilowatt hour. Ten metal halide high bay lights draw 2 amps each at 240 volts for 12 hours a day 5 days a week. How much will these lights cost in a four week period? **A)** $419, **B)** $150, **C)** $105, **D)** $210.

Last Month's Question: Bare aluminum or copper clad aluminum grounding electrode conductors are not permitted to be terminated within ____ inches of the earth.. **A)** 12, **B)** 15, **C)** 18, **D)** 24. The answer is C [NEC 250.120(B)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 5** **May 2005**

Joe Devish And Charlene Clark Leave The Electrical Board

Electrical Board Chairman Joe Devish and long-time Board Member Charlene Clark each ended multiple terms as Board Members at the April 28th meeting. Joe's leadership skills and Charlene's professional service during times of unprecedented change in Washington's electrical industry has contributed directly to the success of the electrical program.

We would like to express our gratitude and appreciation to Joe and Charlene for their many years of commitment, dedication, and voluntary service on the Electrical Board. They have played a major role in improving the quality of the electrical program and ensuring electrical safety for the citizens of Washington State.

Anyone interested in applying for Joe's position as an electrical contractor should apply to the Governor's office before June 15th. Information for applying may be found at: **www.governor.wa.gov/actions/appointments/boards/**

REMINDER! WAC Rule Revision Proposals Must Be Submitted In July

Revision proposals for the next cycle will only be accepted from July 1, 2005 through July 15, 2005. Proposals will not be accepted before or after these dates. The form for proposals must be submitted electronically and will be available on the Labor and Industries website June 20, 2005 at: **www.lni.wa.gov/TradesLicensing/Electrical**. See the March 2005 special edition *Electrical Currents* for details.

Audit Of Class B Basic Installation Labels Shows Improper Use By Contractors

The electrical auditors have reviewed nearly all of the Class B basic installation labels applied on jobsites statewide. Notification letters and warning citations, no penalty, have been issued to contractors who applied the labels to work that is not appropriate for Class B. Auditors found that contractors and their electricians used Class B labels improperly nearly 35% of the time.

RCW 19.28.006(2)(b) defines what types of work are eligible to be used with Class B labels. In addition to the work listed, the statute allows additional, "*Wiring, appliances, devices, or equipment as specified by rule.*" WAC 296-46B-110(6) through (10) establishes specific rules for the use of Class B inspection labels, adds clarification for some of the terms used in the statute, and lists additional electrical equipment like-in-kind replacement work that is eligible for Class B random inspection. **You must read both RCW 19.28.006(2)(b) and WAC 296-46B-110(10) to determine if you can legally apply a Class B basic installation label to your work**. (Note: WAC rule revisions effective June 30, 2005 will combine all this information into WAC 296-46B-110.)

When used for the specific work intended in the law and rules, Class B basic installation labels save time and money for contractors and their customers and for the electrical program. Improper use of these labels is equivalent to failing to purchase the required permit. This places great liability on the electrical contractor and may expose the end-user to a significant safety risk. We will continue to closely monitor the use of Class B labels and may issue citations (with the associated civil penalties) to contractors, administrators, and electricians for illegal use.

Class B Basic Installation Labels – Clarification On Proper Use

The general requirement in Chapter 19.28 RCW limits Class B label use to "basic electrical work that requires minimal circuit modification and has limited exposure hazards."

Some inappropriate uses where a standard electrical work permit is required:

New branch-circuits.

Replacement of damaged circuit conductors.

The conversion of a luminaire to a paddle fan (or paddle fan with accessory luminaire). Proper support of a paddle fan (i.e. listed fan box, or support independent of the outlet box) must always be inspected, even for a like-in-kind replacement. (A paddle fan is manufactured under its own product standard and is not a "motor" and not a luminaire.)

Some appropriate uses where a Class B label is acceptable:

A single circuit extension or specific like-in-kind replacement work on one existing circuit only. "Circuit extension" means conductors extended from an existing outlet on an existing circuit. An extension cannot supply more than two (added) outlets. Devices that may be served from the added outlets are "*general use snap switches/receptacles, luminaires, thermostats, speakers, etc., but does not include wiring/cabling systems, isolating switches, magnetic contactors, motor controllers, etc.*"

The addition of an accessory luminaire kit to an existing paddle fan. See inappropriate uses above for paddle fan installations.

The installation (or replacement) of a single electric sign on an existing single 120-volt, 20-amp maximum sign circuit. Field-assembled sign sections, outline lighting, or neon skeletal tubing installations require standard electric sign permits since they do not meet the "*minimal circuit modification and has limited exposure hazards*" criteria for Class B work.

The like-in-kind replacement of up to a 100 amp, 240 volt electric/oil/gas furnace and like-in-kind replacement of up to a 30 amp, 240 volt air conditioning unit or refrigeration unit.
Note: WAC rule revisions effective June 30, 2005 will add like-in-kind replacement of a unit heater on up to a 30 amp, 240 volt circuit, replacement of not more than 10 standard receptacles with GFCI receptacles, combination replacement of not more than 10 switches or dimmers used to control luminaires, extension or relocation of a thermostat in an existing building, and like-in-kind replacement of a single luminaire not over 277 volts and 20 amps to the list of Class B work.

● July 1, 2005 Is The Deadline For Grandfathering Master Electrician Certification

When chapter 19.28 RCW created master electrician certification and allowed the ability to "grandfather" without examination, July 1, 2005 was set as the last opportunity for qualifying existing certified electricians to obtain master status without examination. The renewal system offers qualifying individuals (electrician-administrators) the opportunity to convert to master status when either of their certifications expired. When converting to master status, 24 hours of CEU's are required. Becoming a master electrician resets your CEU credit to zero and begins a new three-year renewal cycle.
Individuals will always have the option to become a master electrician after gaining the appropriate experience and completing the examination.

● Continuing Education Requirements – RCW-WAC And Code Update Courses

It was brought to our attention that the language in rules (WAC 296-46B-970(2)(f)(i)) and the January 2004 Electrical Currents newsletter are confusing regarding the chapter 19.28 RCW, WAC 296-46B, and Code update continuing education courses acceptable for certification renewal.

The intent is to ensure that Washington electricians and administrators stay informed about current standards applicable to their work. The WAC language does this, but we failed to see the hardship that this could impose on an individual whose expiration date (birthday) is very close to an adoption date for the statute, rules, or the NEC. In the upcoming rule revision cycle, we will modify the text "*currently adopted*" that creates the problem and confusion. We recognized the problem early and have administered the rules as follows:

- At the time of renewal, we accept any valid (un-expired and approved) continuing education course for RCW-WAC or Code update that was completed between the previous and current renewal period of the certificate.
- The same CEU's are applicable to both electrician and administrator certification for an individual as long as they are obtained within the renewal cycle of each certificate. As soon as a certificate is renewed, the CEU history for that specific certificate is reset to zero hours. All CEU's applied to the next renewal of a specific certificate must be obtained after that date.

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● Conductors Inside Of HID Fixture Housings

Mercury vapor, metal halide, and high pressure sodium high intensity discharge (HID) luminaires operate at very high temperatures. The temperature rating of conductors installed by the manufacturer inside the fixture housing can be as high as 150ºC (302ºF). If the connection of the fixture wires to the supply conductors is done inside the luminaire, then the temperature rating of the branch-circuit supply conductors is usually required to be the same as the fixture wires. This requirement is marked on the luminaire or appears in the installation instructions. In many HID luminaires the fixture wires are left long and intended to be routed out of the housing and into an external junction box for connection to the branch-circuit. Common 75ºC (167ºF) or 90ºC (194ºF) rated branch-circuit conductors are suitable when using this external wiring method.

The most common correction written by department inspectors is NEC 110.3 (B), "Listed or labeled equipment shall be installed and used in accordance with any instructions included in the listing or labeling." Save time and money by reading the instructions before installing any electrical equipment.

● Preview 2005 NEC Code Changes – 210.8(A)(7) GFCI Protection For Personnel

A change in NEC 210.8(A)(7) adds "*laundry, utility*" to the existing "*wet bar sinks*" as locations where all 125-volt, single-phase, 15- and 20-ampere receptacles installed within 1.8 m (6 ft.) must have ground-fault circuit-interrupter (GFCI) protection for personnel. This change seems to imply that receptacles of this rating installed to serve clothes washing machines or gas clothes dryers that are within 6 feet of a laundry or utility sink must be GFCI protected. The industry has little experience with the possible problems from operating laundry equipment on GFCI protected circuits. Contractors should not have to manage unnecessary call-backs or service calls that may be possible on such installations.

If you are unable to maintain the 6-foot separation from laundry or utility sinks to receptacles serving laundry equipment, the department will accept the existing precedent for similar appliances in garages found in NEC 210.8(A)(2), Exception No. 2 to (2). GFCI protection will not be required for "*a single receptacle or a duplex receptacle for two appliances located within dedicated space for each appliance that, in normal use, is not easily moved from one place to another and that is cord-and-plug connected in accordance with 400.7(A)(6), (A)(7), or (A)(8).*" If you install a duplex receptacle above or behind laundry equipment that allows connection of other portable 125-volt, single-phase, 15- and 20-ampere plug-in devices or equipment, then that receptacle must be GFCI protected.

● Preview 2005 NEC Code Changes – 225.30(A)(6) and 230.2(A)(6) Additional Feeders Or Services Supplying A Building – New Special Condition

A new condition (6) has been added to the lists of "Special Conditions" that will permit an additional feeder or branch-circuit, or additional service to supply a building or structure for the purpose of enhanced reliability. The Code panel did not define enhanced reliability or require the additional supply to be based on any specific need. This new condition is not as permissive as it may seem. The department will only allow this installation for systems (equipment) configured with a double-ended main and tie-breaker.

The initial proposals in the NEC Committee Report on Proposals (ROP) used the language "*redundant systems for the purpose of enhanced reliability of the supply*" for the new text in NEC 225.30(A) and 230.2(A). The Report on Comments (ROC) detailed an objection to the undefined term "redundant systems" as likely to cause confusion and recommended "*equipment with a double-ended main configuration installed for the purpose of enhanced reliability of the supply*" as an alternative. The Code panel accepted the comment in principle and revised the new NEC text to read "*(6) Systems designed for connection to multiple sources of supply for the purpose of enhanced reliability.*" This new condition (6) allows a main-tie-main configuration, while keeping the language general enough to allow for other listed systems to be developed to function similarly.

● Raceway Installation Limitations For (09) Telecommunications Contractors

Telecommunications contractors (using their uncertified employees) are allowed to install incidental short sections of circular metal or surface metal raceways for access or protection of telecommunications cabling. "Short sections" are limited to 10 feet maximum length. This allows an existing telecommunications outlet to be extended up to ten feet away with surface metal raceway, or it allows a 10 foot circular metal conduit sleeve for access to a hollow wall space or physical protection of a surface

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cable run. A conduit sleeve may have a mud-ring or box at the device end, but the other end must terminate in a fitting and bushing where the cable enters or exits the raceway.

Telecommunication contractors cannot install raceway systems. A raceway system is raceway installed from a box or enclosure to another box or enclosure. Raceway systems must be installed by licensed electrical contractors employing properly certified workers. Telecommunication contractors and workers installing raceway systems are subject to a citation.

● Electrical Question of the Month

This Month's Question: Bare Aluminum or copper clad aluminum grounding electrode conductors are not permitted to be terminated within ___ inches of the earth? **A)** 12, **B)** 15, **C)** 18, **D)** 24.

Last Month's Question: Service entrance conductors must extend at least _____ from a service weatherhead. **A)** 12 inches, **B)** 18 inches, **C)** 24 inches, **D)** 36 inches. The answer is B) [WAC 296-46B-230(5)(b)(Notes to drawings E-101, E-102, and E-103, note (7)]

● Quarterly Compliance Report

This report lists the final judgments for: no electrical contractor's license, hiring uncertified electricians, no electrician certification, and failure to obtain necessary electrical work permits. The report is also posted on the Electrical Program website. The following firms and persons received a final judgment during the 1st quarter of 2005. A final judgment means that all rights of appeal have been exhausted and a penalty is due or has been paid.

Final Judgments of Electrical Laws
For the 1st quarter of 2005

Violator	Penalty
Violation – No Electrical Contractor's License	
Region 1 – North Puget Sound	
2-HAWKS RESIDENTIAL SERVICES, FREESTAD RD, ARLINGTON, WA	$ 500
ADVANCED CONSTRUCTION INC, HWY 99, EVERETT, WA	$ 500
AUTOMATION UNLIMITED, PO BOX, BELLINGHAM, WA	$ 500
BERG, BRET, MYRTLE RD NW, STANWOOD, WA	$ 500
BOB'S PERSONALIZED REMODELING, 228TH ST SE, BOTHELL, WA	$ 500
BRAUN, DENNIS C, 78TH AVE E, PUYALLUP, WA	$ 500
COMMERCIAL FENCE CORP, PO BOX6, SEATTLE, WA	$ 500
COMMERCIAL FENCE CORP, PO BOX, SEATTLE, WA	$ 500
CONTROL SYSTEMS, PO BOX, ISSAQUAH, WA	$ 500
CONTROL SYSTEMS, PO BOX, ISSAQUAH, WA	$ 500
COOK, DANIEL B, OLD OWEN RD, MONROE, WA	$ 500
COOK, DANIEL B, OLD OWEN RD, MONROE, WA	$ 1,000
CORVUS, PARKRIDGE RD, BELLINGHAM, WA	$ 500
COUNTRY HOMES CONST/DESIGN LLC, W KING TUT, BELLINGHAM, WA	$ 500
EMERALD DESIGN INC, HEWITT AVE, EVERETT, WA	$ 500
HICKS, ADRIAN L, WILLIAMS RD, RICHMOND, BC	$ 500
JULIUS STEWART INC, WOOD RED RD, WOODINVILLE, WA	$ 500
K & G CONTRACTING, PO BOX, MONROE, WA	$ 500
KAETRON INC, LIBERTY ST, LYNDEN, WA	$ 500
KOEPPEN, KENNETH O, DUBUQUE RD, SNOHOMISH, WA	$ 500
LEATH, FRANKLIN, MAINE ST, CUSTER, WA	$ 500
MAGNUSON, DAVID B, PINEWOOD AVE, BELLINGHAM, WA	$ 500
NORTHWEST ENERGY SERVICES, 44TH AVE. W, MOUNTLAKE TERRAC, WA	$ 500
WASHINGTON ASSOC OF CHURCHES, SEATTLE TOWER, SEATTLE, WA	$ 500
WEAR, LES, 9TH ST, SNOHOMISH, WA	$ 500
WELD N STUFF, 2ND AVE NE, MARYSVILLE, WA	$ 500
WEST COAST ENTERPRISES, 196TH ST SW, LYNNWOOD, WA	$ 1,500
WHITE, BRYCE L, PO BOX, STARTUP, WA	$ 500
WLAM CONSTRUCTION & ROOFING, 67TH AVE NE, ARLINGTON, WA	$ 500
Region 2 – King County	
ANTONIO, JUNIE TORRES SR, WILDWOOD LN, SEATTLE, WA	$ 500
CHAN'S CONSTRUCTION, PO BOX, SEATTLE, WA	$ 500
DAVIS DOOR SERVICE INC, S GRAND ST, SEATTLE, WA	$ 500
DR ELECTRIC, S 177TH PL, BURIEN, WA	$ 1,500
EUROPEAN BUILDERS/WINDOW TECH, PAC HWY S, SEATTLE, WA	$ 500
FALKENBURY, DONALD ALLEN, 35TH AVE W, BRIER, WA	$ 500
IRONFIRE DESIGN & FABRICATION, NE 126TH PL, KIRKLAND, WA	$ 500
PLC MULTIPOINT INC, 111TH ST SW, EVERETT, WA	$ 500

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RAND, MICHAEL A, SOUTHBAY PL NE, TACOMA, WA	$ 500
SATELLITE CONNECTION, 180TH PL SW, LYNNWOOD, WA	$ 500
Region 3 – Pierce & Kitsap County & Olympic Peninsula	
CAMERASCAN, PO BOX, NORTH BEND, WA	$ 500
FLODIN, DALE, PO BOX, BAINBRIDGE ISLAN, WA	$ 500
FREDENBURG, MARK G., SW SPRUCE RD., PORT ORCHARD, WA	$ 500
JOHNSTON, JOHN A.L., NE COUNTRY PARK RD, BAINBRIDGE ISLAN, WA	$ 500
LONGVIEW CONSTRUCTION INC, DAPPLE CT NE, BAINBRIDGE ISLAN, WA	$ 500
PETERS, WILLIAM, ARCADIA WEST, PORT TOWNSEND, WA	$ 500
WHITBY, DAVID B, S 115TH ST, TACOMA, WA	$ 500
YORK, HAROLD E, NORTH 30TH ST, TACOMA, WA	$ 500
Region 4 – SW Washington	
A & M CABLE, PO BOX, RAINIER, WA	$ 500
AMERICAN H D INC, NE 96TH AVE, VANCOUVER, WA	$ 500
ELITE AUTOMATION LTD, SIDLEY STREET, BURNABY BC, CN	$ 500
GLADSON, LLOYD, HARLEY RD, CHEHALIS, WA	$ 500
HILL, DOUG JAMES, S LINCOLN STREET, ABERDEEN, WA	$ 500
J T STEPHENS CONSTRUCTION, COURT ST NE, SALEM, OR	$ 500
JIM LEHEW CONSTRUCTION, 2ND AVE SW, OLYMPIA, WA	$ 500
MASTRO, JOSEPH, MAIN ST FISHERS, MENDON, NY	$ 500
MITCHELL CRANE & EQUIPMENT CO, PO BOX, MEDFORD, OR	$ 500
ROGERS ELECTRIC, COMMERCE DRIVE, IRVING, TX	$ 500
SEAHOME SERVICES INC, THORNDYKE RD, QUILCENE, WA	$ 500
TAURUS POWER & CONTROLS INC, SW AVERY ST, TUALATIN, OR	$ 500
TAURUS POWER & CONTROLS INC, SW AVERY ST, TUALATIN, OR	$ 500
TAURUS POWER & CONTROLS INC, SW AVERY ST, TUALATIN, OR	$ 500
TRAC, MEN C, CONGER CT, OLYMPIA, WA	$ 500
Region 5 – Central Washington	
DRISCOLL, CODY L, BEERS RD, PROSSER, WA	$ 500
RICK POULIN WELL DRILLING LLC, LANCASTER RD, SELAH, WA	$ 500
TRI-AIR HEATING & A/C INC, CLARK CT, WEST RICHLAND, WA	$ 500
VISTA CONSERVATION RSRCS INC, VISTA DR, REPUBLIC, WA	$ 500
WAYNES LOCK & KEY, N FIRST ST, SUNNYSIDE, WA	$ 500
WYLIE, MIKE, 3RD ST, MESA, WA	$ 500
Region 6 – Eastern Washington	
ADDINK, BRYAN, E DAYSPRING LANE, CHATTAROY, WA	$ 500
CAMPBELL, BRIAN, S MANITO BLVD, SPOKANE, WA	$ 500
IMAGINATION UNLIMITED, PO BOX, CHEWELAH, WA	$ 500
INSTANT SIGN FACTORY, W 2ND AVE, SPOKANE, WA	$ 500
SALCO INDUSTRIES INC, HWY 291, NINE MILE FALLS, WA	$ 500
UNIVERSAL HANDYMAN SVCS LLC, ORIN RICE RD, COLVILLE, WA	$ 500
Central Office	
DISH NETWORK SERVICE CORP, S MERIDIAN BLVD, ENGLEWOOD, CO	$ 500
TELSERVICE NORTHWEST LLC, 172ND AVE SE, AUBURN, WA	$ 500
TELSERVICE NORTHWEST LLC, 172ND AVE SE, AUBURN, WA	$ 500
TELSERVICE NORTHWEST LLC, 172ND AVE SE, AUBURN, WA	$ 500
TELSERVICE NORTHWEST LLC, 172ND AVE SE, AUBURN, WA	$ 500
Violation – Hiring Uncertified Electrician	
Region 1 – North Puget Sound	
BERT LLC, NE MIDWAY BLVD, OAK HARBOR, WA	$ 100
COMMERCIAL FENCE CORPORATION, PO BOX, SEATTLE, WA	$ 100
COMMERCIAL FENCE CORPORATION, PO BOX, SEATTLE, WA	$ 100
EMERALD DESIGN INC, HEWITT AVE, EVERETT, WA	$ 100
JULIUS STEWART INC, WOOD RED RD, WOODINVILLE, WA	$ 100
WLAM CONSTRUCTION & ROOFING, 67TH AVE NE, ARLINGTON, WA	$ 100
Region 2 – King County	
ADT SECURITY SERVICES INC, POWELL ST, RENTON, WA	$ 500
IMPCO ELECTRIC CO, 103RD NE, BOTHELL, WA	$ 100
OLYMPIC SEC & COMM SYS INC, PO BOX, ARLINGTON, WA	$ 100
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LONGVIEW CONSTRUCTION INC, DAPPLE CT NE, BAINBRIDGE ISLAND, WA	$ 100
PARAMOUNT ELECTRIC CO, S TACOMA WAY, TACOMA, WA	$ 500
S & S HOME & LAND RENOVATN INC, PO BOX, ROY, WA	$ 100
Region 4 – SW Washington	
A & M CABLE, PO BOX, RAINIER, WA	$ 100
CHERRY CITY ELECTRIC, 22ND ST SE, SALEM, OR	$ 100
D J'S ELECTRICAL INC, NE 142ND AVE, BATTLE GROUND, WA	$ 100
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QUADRANT SECURITY INC, PO BOX, PORTLAND, OR	$ 500
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TELENET TECHNOLOGIES LLC, DAY SE, BELLINGHAM, WA	$ 100
Violation –Uncertified Electrician	
Region 1 – North Puget Sound	
BALL, WESLEY, 35TH STREET, ANACORTES, WA	$ 250
BEERMAN, J KELLY, PARKRIDGE RD, BELLINGHAM, WA	$ 250
CLANCY, BUTCH, WOODINVILLE REDMOND RD, WOODINVILLE, WA	$ 250
COOK, DANIEL B, OLD OWEN RD, MONROE, WA	$ 100
COOK, DANIEL B, OLD OWEN RD, MONROE, WA	$ 250
DAVIS, CHRIS, SW GENESSE ST, SEATTLE, WA	$ 250
DURYEE, TIM, 23RD ST, BELLINGHAM, WA	$ 250
FOX, SCOTT D, W KING TUT, BELLINGHAM, WA	$ 250
FULLERTON, GLEN R, FREESTADT RD, ARLINGTON, WA	$ 250
GRUBBS, GLENN W, SOUTH DES MOINES MEM DR, SEATTLE, WA	$ 250
GRUBBS, GLENN W, SOUTH DES MOINES MEM DR, SEATTLE, WA	$ 250
HARMON, GEORGE, PO BOX, EVERETT, WA	$ 250
HICKS, ADRIAN L, WILLIAMS RD, RICHMOND, BC	$ 250
HUTCHENS, STEWART L, 19TH, EVERETT, WA	$ 250
JONES, BRENT, 2ND AVE NE, MARYSVILLE, WA	$ 250
MEENDERINCK, LAUREN J, GUIDE MERIDIAN RD, LYNDEN, WA	$ 250
MILLER, ROBERT D, 228TH ST SE, BOTHELL, WA	$ 250
MILLHOLLAND, ERICK, 67TH AVE NE, ARLINGTON, WA	$ 250
WNEK, ANDRZEJ, BURNETT AVE N, RENTON, WA	$ 250
Region 2 – King County	
GLOSSNER, JAMES GRANT, 170TH ST CT E, TACOMA, WA	$ 250
HADDAD, JOSEPH, NE 4TH PL, SAMMAMISH, WA	$ 250
ROSENLUND, JOHN M, 420TH AVE SE, NORTH BEND, WA	$ 250
Region 3 – Pierce & Kitsap County & Olympic Peninsula	
FLODIN, DALE, PO BOX, BAINBRIDGE ISLAN, WA	$ 250
SEIFNER, ROBERT, PO BOX, ROY, WA	$ 250
SYKES, GERALD C, 3RD AVE SE, DES MOINES, WA	$ 250
ZIMMARDI, THOMAS A, BANNER RD SE, OLALLA, WA	$ 250
Region 4 – SW Washington	
ARANA, JOSE ANTONIO, E IRVING BLVD, IRVING, TX	$ 250
BARRON, GREGORY L, THORNDYKE RD, QUILCENE, WA	$ 250
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Region 5 – Central Washington	
ERICKSON, DAMIAN A, S 38TH AVE #31, YAKIMA, WA	$ 250
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Region 6 – Eastern Washington	
GARWOOD, DARRELL, HWY 291, NINE MILE FALLS, WA	$ 250
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Violation –No Electrical Permit

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CANYONS RESTRAURANT, N KELSEY ST SE, MONROE, WA	$ 250
CARPENTER, STEVE, AVENUE D, SNOHOMISH, WA	$ 250
CLEMENTSON, CONRAD, 92ND ST SE, SNOHOMISH, WA	$ 50
D C PETERSON ELECTRIC INC, 132ND ST SW, LYNNWOOD, WA	$ 250
DALE'S ELECTRIC INC, BERTHUSEN RD, LYNDEN, WA	$ 2,000
E H S LLC, STONE AVE N, SEATTLE, WA	$ 1,000
EMERALD CITY ELECTRIC INC, 62ND PL W, LYNNWOOD, WA	$ 250
ERICKSON, JOHN W, WAGNER RD, MONROE, WA	$ 50
FRANKLIN, STEVE D, 60TH ST NE, LAKE STEVENS, WA	$ 50
GOMAVITZ, SHELLEY, YEAGER RD, MONROE, WA	$ 250
HAT ISLAND YACHT & GOLF CLUB, PO BOX, EVERETT, WA	$ 250
HOME RUN ELECTRIC LLC, PO BOX, BOTHELL, WA	$ 250
HOME RUN ELECTRIC LLC, PO BOX, BOTHELL, WA	$ 250
HOME RUN ELECTRIC LLC, PO BOX, BOTHELL, WA	$ 250
HOME THEATRE SPECIALTIES, ASH WAY, LYNNWOOD, WA	$ 250
HOME THEATRE SPECIALTIES, ASH WAY, LYNNWOOD, WA	$ 1,000
LIGHTNING ELECTRIC INC, RATHBONE RD, FERNDALE, WA	$ 1,000
MCDONALD, SCOTT, 277TH AVE, MONROE, WA	$ 250
OLYMPIC MECHANICAL INC, 66TH AVE W, MOUNTLAKE TERRAC, WA	$ 1,000
PACIFIC COAST INDSTRL LTG INC, PO BOX, WOODINVILLE, WA	$ 250
PACIFIC COAST LTG & ELEC INC, PO BOX, WOODINVILLE, WA	$ 1,000
PIGNATARO, JOE, 72ND AVE W, EDMONDS, WA	$ 250
SANTORA, NICK, 89TH AVE SE, MERCER ISLAND, WA	$ 50
SHANNON HEIGHTS HEATING, 59TH AVE NE, ARLINGTON, WA	$ 250
SKY VALLEY ELEC SECURITY LLC, 299TH AVE SE, MONROE, WA	$ 1,000
STREAMLINE ELECTRICAL SER INC, NE 172ND CT, SEATTLE, WA	$ 250
TUBE ART DISPLAYS INC, OCCIDENTAL AVE S, SEATTLE, WA	$ 250
YARDES, RICHARD, 39TH AVE SW, SEATTLE, WA	$ 250

Region 2 – King County

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ALARM CENTER INC, PO BOX, LACEY, WA	$ 1,000
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BRENNAN HEATING & A/C LLC, 152ND AVE NE, REDMOND, WA	$ 250
C S I SIGN SVC & LIGHTING INC, 1ST AVE S, SEATTLE, WA	$ 250
DAVIS DOOR SERVICE INC, S GRAND ST, SEATTLE, WA	$ 250
DIGITAL CINEMA DESIGN, 152ND AVE NE, REDMOND, WA	$ 250
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DO, TUAN, SW 108TH ST, SEATTLE, WA	$ 50
ENRIGHT, LINDA, 1ST AVE S, SEATTLE, WA	$ 250
EXPERT ELECTRIC INC, PACIFIC AVE, TACOMA, WA	$ 250
FOCUS MICRO INC, CAMPUS PLACE, MUKILTEO, WA	$ 250
GREAT WALL ELECTRIC, S VERN COURT, SEATTLE, WA	$ 250
HEAT N AIR TECHS, NE 59TH AVE, TACOMA, WA	$ 250
JOHANSEN MECHANICAL INC, PO BOX, WOODINVILLE, WA	$ 100
K & D MECHANICAL INC, SW CAMPUS DR, FEDERAL WAY, WA	$ 250
MCGRUE, KAREN, S 272ND ST, KENT, WA	$ 50
MERIT MECHANICAL INC, 153RD AVE NE, REDMOND, WA	$ 250
PACIFIC COAST INDSTRL LTG INC, PO BOX, WOODINVILLE, WA	$ 250
PACIFIC COAST INDSTRL LTG INC, PO BOX, WOODINVILLE, WA	$ 250
PACIFIC COAST INDSTRL LTG INC, PO BOX, WOODINVILLE, WA	$ 250
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VO, PAUL, PO BOX, FEDERAL WAY, WA	$ 250
WASHINGTON ENERGY SERVICES CO, THORNDYKE AVE W, SEATTLE, WA	$ 250
WASHINGTON ENERGY SERVICES CO, THORNDYKE AVE W, SEATTLE, WA	$ 2,000
XETA TECHNOLOGIES INC, NORTHUP WAY, BELLEVUE, WA	$ 250
Region 3 – Pierce & Kitsap County & Olympic Peninsula	
CHIN'S ELECTRIC INC, 13TH PL SW, FEDERAL WAY, WA	$ 250
ELGOCO INC, CHICO WAY NW, BREMERTON, WA	$ 250
MADSEN ELECTRIC, S ORCHARD ST, TACOMA, WA	$ 250
PACIFIC OFFICE EQUIPMENT INC, E 8TH ST, PORT ANGELES, WA	$ 250
PENINSULA HEAT INC, W 8TH ST, PORT ANGELES, WA	$ 250
RICHARD C REED ELECTRIC INC, MERIDIAN E, PUYALLUP, WA	$ 250
S M E CORP, A STREET, TACOMA, WA	$ 1,000
SECURITY SRVCS NORTHWEST INC, PO BOX, PORT TOWNSEND, WA	$ 250
T C NORTHWEST INC, MILL RD, SEQUIM, WA	$ 250
WASHINGTON ENERGY SERVICES CO, THORNDYKE AVE W, SEATTLE, WA	$ 1,000
Region 4 – SW Washington	
A + ELECTRIC SERVICE, PACIFIC AVE SE, LACEY, WA	$ 1,000
BRINKS HOME SECURITY INC, WEST VALLEY HIWAY H106, KENT, WA	$ 250
BUD'S LUMBER, PO BOX, SOUTH BEND, WA	$ 250
EVERGREEN SCHOOL DISTRICT #114, PO BOX, VANCOUVER, WA	$ 250
EVERGREEN SCHOOL DISTRICT #114, PO BOX, VANCOUVER, WA	$ 250
HASKIN ELECTRIC INC, NE ST JOHNS RD, VANCOUVER, WA	$ 250
HIGHLIGHT SIGN CORP, PO BOX, TIGARD, OR	$ 1,000
JIMCO ELECTRICAL CONTRNG INC, AIRWAY ROAD, LEBANON, OR	$ 250
OLSSON INDUSTRIAL ELECTRIC INC, PO BOX, EUGENE, OR	$ 250
PETERSON, MARK, PO BOX, CHINOOK, WA	$ 250
SES INC, AUBURN WAY N, AUBURN, WA	$ 1,000
VANCOUVER SIGN COMPANY INC, NE HWY 99, VANCOUVER, WA	$ 250
Region 5 – Central Washington	
BUILDING CONTROL SYSTEMS INC, 66TH AVE W, LYNNWOOD, WA	$ 250
BUILDING CONTROL SYSTEMS INC, 66TH AVE W, LYNNWOOD, WA	$ 250
BUILDING CONTROL SYSTEMS INC, 66TH AVE W, LYNNWOOD, WA	$ 250
ESSCO OF TRI-CITIES INC, ALDER AVE, RICHLAND, WA	$ 1,000
FARMERS ELECTRIC, E HEMLOCK, OTHELLO, WA	$ 1,000
HOLDEN'S HEATING & A/C INC, ANTOINE CREEK RD, CHELAN, WA	$ 250
J J P ELECTRIC, N GREENWOOD BLVD, SPOKANE, WA	$ 250
TRI-AIR HEATING & A/C INC, CLARK CT, WEST RICHLAND, WA	$ 250
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E T A COMPANY, PO BOX, SPOKANE, WA	$ 250
ECHO ELECTRIC, E 44TH, SPOKANE, WA	$ 250
ENERGIZED ELECTRIC INC, PO BOX, SPOKANE, WA	$ 250
HEGWER, SCOTT, N MAYFAIR, COLBERT, WA	$ 50
LEECO ELECTRIC, PO BOX, SPOKANE, WA	$ 250
M CLARK ELECTRICAL LLC, GREGGS RD, NEWPORT, WA	$ 250
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ORNAMENTAL GATE & FENCE, E MIDWAY, MEAD, WA	$ 250
SALCO INDUSTRIES INC, HWY 291, NINE MILE FALLS, WA	$ 250
SPOKANE COMFORT SYSTEMS INC, S ASHTON ST, GREENACRES, WA	$ 250
STANDARD PLBG HTG CNTRLS CORP, E TRENT, SPOKANE, WA	$ 250
TURNIDGE, GARY, N NEWPORT HWY, MEAD, WA	$ 250
Central Office	
BARRON HEATING & A/C INC, PO BOX, BELLINGHAM, WA	$ 1,000
BRUCE SMITH HTG & COOLING INC, 44TH AVE W, LYNNWOOD, WA	$ 250
ELECTRIC OUTFITTERS, PO BOX, DAVENPORT, WA	$ 250
HOME THEATRE SPECIALTIES, ASH WAY, LYNNWOOD, WA	$ 250
HOME THEATRE SPECIALTIES, ASH WAY, LYNNWOOD, WA	$ 250
MASSIE, JERRY, NE 238TH ST, BATTLE GROUND, WA	$ 250
PHILLY YA BELLY, HIGHWAY 99, EVERETT, WA	$ 250
PROFESSIONAL ELECTRIC INC, PO BOX, ARLINGTON, WA	$ 250
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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 4** **April 2005**

Adoption of 2005 NEC And WAC 296-46B On Schedule For June 30, 2005

The public hearings on the current WAC revisions were held in Tumwater and Yakima during the first week of April. The department received only positive comments on the rules. **The adoption date for the revised WAC 296-46B is June 30, 2005. The 2005 version of the National Electrical Code (NEC) is adopted in the rule package and will be effective on the same date.** The complete version of the new WAC 296-46B, showing the deletions and insertions, is available on the Labor and Industries website at:

http://www.lni.wa.gov/tradeslicensing/electrical/whatsnew/ruledev/

IMPORTANT CORRECTIONS – Department Code Update Training Courses

Midway through the recent training sessions (8-hour, NEC Update - Chapters 1-4), we were made aware of errors or omissions in the training presentation on two specific changes in the 2005 NEC. When the errors were found, the remaining classes were given correct information. To ensure everyone gets it right, please take note of the following two corrected items:

240.20(B) Circuit Breaker As Overcurrent Device. The addition of new wording in the general rule makes it clear that both manual and automatic operation of circuit breakers are required to open all ungrounded conductors of the circuits they protect. We trained per NEC 240.20(B)1 that handle ties can only be used with single-pole breakers on multiwire circuits when line-to-neutral loads are served and two devices are mounted on the same yoke. **However, NEC 240.20(B)(2) still allows the use of individual single-pole circuit breakers with handle ties for <u>line-to-line</u> loads on single-phase circuits or 3-wire, direct current circuits, and NEC 240.20(B)(3) still allows specific conditions for such use on 3-phase and 2-phase circuits**.

430-Motors, Part IX Disconnecting Means, 430.102 Location. We trained that the text in 430.102(B) was modified to correct misinterpretation of changes in the 2002 NEC. The controller disconnecting means required in 430.102(A) may serve as the motor disconnecting means required in 430.102(B) if it is "in sight" of the motor location. **We stated that this was a return to the 1999 NEC requirements prior to the 2002 NEC changes in 430.102(B), and that is <u>not</u> a correct statement**. In both the 2002 NEC and 2005 NEC there must be a disconnecting means for a motor located in sight from the motor location and driven machinery location, unless the specific conditions of the Exception, parts (a) or (b), are met. The 2005 NEC modified text clarifies that the controller disconnect may also serve as the required motor disconnect if it happens to be "in sight" from the motor and driven machinery locations.

More Applicants Needed For The Technical Advisory Committee

The technical advisory committee (TAC) consists of industry representatives who volunteer to review and make recommendations on proposed changes for the 2006-2007 Electrical Rules (Chapter 296-46B WAC). We still need applicants in a few positions. The committee needs more 01-journeyman electricians, a 06-limited energy electrician and contractor, a 06A-HVAC contractor, a 02-residential contractor, and a plumbing contractor and plumber. TAC members will spend a full day September 20, 2005 to meet as a group and make recommendations on revision proposals. Submitted material will be E-mailed to all members August 1, 2005 and must be reviewed prior to the September 20th meeting in Tumwater. An additional meeting may be scheduled if the TAC finds it necessary.

Persons interested in becoming TAC members must submit a letter of interest to the Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460 to be received no later than July 1, 2005. The letter should show constituency and support for the prospective member. All applications will be evaluated to determine if the applicant meets the requirements of the position.

Annual WAC Rule Revisions Reopen Soon – Proposals Must Be Submitted In July

Much like the NEC development process, the electrical rules open for revision proposals right after the current version is adopted. The annual revision cycle opens July 1, 2005 and we will only accept

proposals for 15 days. All proposals must be made electronically using the form supplied by the department. All proposals must clearly identify original language as "new text." Proposed revisions should include the relevant text and should use the legislative format (i.e. Use underscore (or underlining) to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~)). **Revision proposals for the next cycle will be accepted only from July 1, 2005 through July 15, 2005**. Proposals will not be accepted before or after these dates. The form for proposals will be available on the Labor and Industries website June 20, 2005 at:

www.lni.wa.gov/TradesLicensing/Electrical

Telecommunications Conductors And Cables Installed In Wet Locations

The NEC defines the interior of an underground raceway as a wet location and requires all insulated conductors and cables used in wet locations to be of a type listed for such use. Listed wet location conductors and cables used for lighting and power, limited energy (NEC Article 725), and fire alarm systems (NEC Article 760) have been widely available for many years and must be used in underground raceway systems. Today there are few communications cables listed for use in wet locations. Those available are typically designed for direct burial, expensive, and may not have the performance characteristics needed for a specific telecommunications application.

In many areas of the country the telecommunications industry is unregulated, and the work is not inspected to any installation standard. Until more jurisdictions regulate telecommunications work, the cable manufacturing industry has little incentive to formally submit their telecommunications products to testing laboratories to be evaluated for use in wet locations. The industry has a long history of successful operation of telecommunications systems using existing unlisted cables in underground raceways. Until a wider range of communications cables listed for use in wet locations is available in the marketplace, the department will not require such listing and marking on communications cables used for telecommunications circuits installed in underground raceways.

Preview 2005 NEC Code Changes – 110.26 Spaces About Electrical Equipment

There is a significant change involving working clearances about large equipment in the 2005 NEC. Failure to recognize the new requirement can possibly affect the building electrical equipment room structural access and egress plans and result in major costs to the electrical or general contractor.

For many years the entrance to working space requirements for "large equipment" (e.g. twice the depth of working space, panic hardware on doors opening in the direction of exit, unobstructed exit travel, or doors at each end of the equipment space) has been based on equipment rated 1200 amperes or more and over 1.8 m (6 ft.) wide. **The additional parameter of "over 1.8 m (6 ft.) wide" has been removed. The "large equipment" working space requirements now apply to all equipment rated 1200 amperes or more that contains overcurrent devices, switching devices or control devices**.

Preview 2005 NEC Code Changes – 408.4 Circuit Directory Or Circuit Identification

The text now reads "Every circuit and circuit modification shall be legibly identified as to its clear, evident, and specific purpose or use. **The identification shall include sufficient detail to allow each circuit to be distinguished from all others**. The identification shall be included in a circuit directory that is located on the face or inside of the panel door in the case of a panelboard, and located at each switch on a switchboard."

We expect this identification to indicate the specific equipment, or location(s) of the areas, spaces, or rooms served by the circuits. (*Lights 1, Lights 2, Lights 3*…or *Receptacles A, Receptacles B, Receptacles C*… is not acceptable identification.) The installer must accurately complete a circuit directory at the time of the initial installation or rough-in inspection.

Electrical Question of the Month

This Month's Question: Service entrance conductors must extend at least _____ from a service weather head. **A)** 12 inches, **B)** 18 inches, **C)** 24 inches, **D)** 36 inches.

Last Month's Question: When installed on the outside of a raceway or enclosure, the length of the equipment bonding jumper shall not exceed ____ feet and shall be routed with the raceway or enclosure. **A)** 4, **B)** 5, **C)** 6, **D)** 8. The answer is C) [NEC 250.102 (E)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 3SE** **March 2005**

SPECIAL EDITION

The Department Is Seeking Stakeholder Input For Proposed Rule Changes

Any stakeholder in the electrical industry may make proposals for additions and/or revisions to the Washington Administrative Code WAC 296-46B – Electrical Safety Standards, Administration, and Installation electrical rules. Proposals may be submitted from July 1, 2005 through July 15, 2005. Proposal submission guidelines are detailed below.

Rules are developed to aid both stakeholders and the department in clarification or enforcement of the intent of the electrical statute. New rules cannot be drafted simply because an individual feels that "it's a good idea." Technical changes require evidence of a specific problem and substantiation that the proposal will provide a solution for that problem.

The department is responsible and has final authority for developing all rules. The department will act as the correlating organization during the rule development process and may at any time promote rule change as necessary to accommodate statutory change or department policies or procedures.

Proposals for Change

The form shown in this edition must be used to submit rule proposals for the 2005 – 2006 revision cycle. An electronic fill-in version of the form is available on our website homepage:

www.lni.wa.gov/TradesLicensing/Electrical

Industry proposals **must be received from July 1, 2005, through July 15, 2005**. The submitter may submit a proposal(s) by:

- Sending the proposal(s) as an email attachment to *TAC2005@lni.wa.gov*; or
- Mailing a compact or floppy disc containing the proposal(s) to Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460.

Proposals will not be accepted before or after these dates. All proposals to WAC 296-46B **must be made electronically** using the form supplied by the department. All proposals must clearly identify original language as "new text." Proposed revisions should include the relevant existing text and should use the legislative format (i.e. Use underscore (or underlining) to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~)). **Proposals not submitted according to these instructions will be rejected.**

Technical Advisory Committee General

The department will appoint an advisory TAC made up of experts and interest group representatives to review and make **recommendation** on proposals from the electrical industry.

Persons interested in becoming TAC members must submit a letter of interest to the Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460 **to be received no later than July 1, 2005**. The letter should show constituency support for the prospective member. All applications will be evaluated to determine: that the applicant meets the requirements for the position.

Anyone wishing to be kept informed of the WAC process should join the *Electrical Listserve* at:

http://www.lni.wa.gov/Main/Listservs/Electrical.asp

There will not be a specific mailing list for this process. A special posting of the WAC process will be made on the Electrical Program internet website and in updates in the *Electrical Currents* newsletter. TAC makeup will be based on an equitable distribution relative to proportion of involvement within the electrical industry in Washington. TAC membership provides an opportunity for licensed electrical contractors, certified electricians, electrical engineers, electrical manufacturers, business owners, city regulators, L&I electrical inspection staff, electrical trainer, electrical testing laboratories, electrical & telecommunications utilities, training schools, and consumers to participate in the WAC development process.

If necessary, each successful candidate may have an alternate attend any TAC meeting. There will be no formal alternate assigned by the department. Any TAC member that is absent must notify the Chief Electrical Inspector of the alternate's name one day prior to the TAC meeting. Failure to make the required notification will result in the position being vacant during the meeting.

● TAC – Process

The TAC will make recommendations on industry proposals and identify proposals that may have an economic impact on other specialties, small businesses, construction costs, or the cost of enforcement. TAC representatives must have decision-making authority at committee meetings. Members who know they will be absent from a TAC meeting should make every effort to send their alternate. The TAC must review and evaluate proposals based on the need:

- To address a critical life/safety need;
- To address a specific state policy/statute;
- To maintain a fair competitive environment;
- To address a unique character of the State; or
- To correct errors and omissions.

The TAC will operate on a 2/3 majority basis. A 2/3 vote in support of a motion, of members in attendance, will be considered as **significant support** for the motion made on a specific proposal. The TAC can propose amended language to a proposal. All amendments must be reviewed and considered during the TAC meeting. All TAC members share an equal vote. Passing proposals will be forwarded to the Electrical Board for their final recommendation to the department.

● TAC – Membership

Chairperson– Chief Electrical Inspector (non voting)

1	Consumer	1	WA Manufacturing Business
1	Training School	1	JATC
1	Continuing Education Provider	1	Electrical Engineer
1	Electrical Manufacturer Representative	1	Electrical Testing Laboratory
1	L&I Inspection Supervisor	1	L&I Inspector
1	City Regulator	1	Electrical Utility
1	Telecommunications Utility	7	01 Contractor
1	02 Residential	2	06 Specialty Contractor
2	06A Specialty Contractor	1	09 Telecommunications Contractor
11	01 Journeyman Electrician	1	02 Specialty Electrician
2	06 Specialty Electrician	2	06A Specialty Electrician
1	AD HOC Specialty Contractor	1	07 Nonresidential Maint. Electrician
1	Plumber	1	AD HOC Specialty Electrician
1	Plumbing Contractor		

Total membership is 47 plus the Chairperson

Notes:

- All 47 positions are voting members.
- All contractor positions must be filled by an appropriately licensed electrical/telecommunications contractor or a representative of an electrical contractor's association in Washington representing that specialty.
- All electrician positions must be filled by an appropriately certified electrician.
- The AD HOC contractor and specialty electrician positions must be filled by a specialty not represented with a member on the TAC.
- The plumbing contractor position must be filled by a registered general or plumbing contractor or a representative of a plumber contractor's association in Washington representing that specialty.
- The plumber position must be filled by a certified plumber.

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Data and Tabulation method used to calculate the number of contractor and electrician members

License Type	# of Contactors	% of Specialties	TAC Members	# of Electricians	% of Specialties	TAC Members
1	2,462		7	16,661		11
2	261	10%	1	1,857	17%	1
3	40	2%	0	101	1%	0
03A	50	2%	0	77	1%	0
4	110	4%	0	304	3%	0
6	547	21%	2	2,218	20%	2
06A	667	26%	2	4,212	38%	2
06B	26	1%	0	2	0%	0
7	141	5%	0	1,267	12%	1
07A	12	0%	0	59	1%	0
07B	140	5%	0	601	5%	0
07C	5	0%	0	5	0%	0
07D	38	1%	0	47	0%	0
07E	7	0%	0	207	2%	0
9	501	19%	1	0	0%	0
10	41	2%	0	59	1%	0
AD Hoc specialty			1			1
Total Specialties	**2,586**		**7**	**11,016**		**7**
JW Multiplier	**.95**			**1.51**		
Total	**5,048**		**14**	**22,134**		**18**

Note for specialties: <7% = 0 members
7 to 19.9% = 1 member
20% to 39.9% = 2 members
>40% = 3 members
AD HOC specialty can be any unrepresented specialty

Note for 01 Journeyman Electrician: 01 members = # of total specialties times the JW Multiplier
JW Multiplier = # of 01 divided by the # of specialties

General Note: Unfilled positions will remain vacant.

- **2005-2006 WAC revision process – Proposed Sequence of Events**
  - **June 2005** – File CR 101 – pre-proposal statement of inquiry
  - **July 1, 2005** – Call for proposals to: amend or add to the existing WAC (open sections only)
  - **July 1, 2005** – TAC applications closed
  - **July 15, 2005** – Close proposal period
  - **August 1, 2005** – TAC membership published
  - **August 1, 2005** – TAC members individually review proposals
  - **September 20, 2005** – TAC meets to recommend on proposals *****
  - **October 27, 2005** – Electrical Board review
  - **November 2005** – Department review and final draft development
  - **January 2006** – File CR 102 – proposed rule filing (opens the official required public comment period)
  - **March 2006** – Public hearings
  - **April 2006** – File CR 103 – rulemaking order (adoption)
  - **June 2006** – Effective rule

* Additional meetings may be scheduled if necessary.

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PROPOSAL FORM for 2005 – 2006 WAC 296-46B Rule Changes

Rule/Section: _____ (X one): ☐New Text ☐Revised Text ☐Deleted Text

Mail cd or floppy to: Chief Electrical Inspector

Department of Labor and Industries
Electrical Section
PO Box 44460
Olympia, WA 98504-4460

FOR L&I USE ONLY

Date Received:

Email to: *TAC2005@lni.wa.gov*

NOTES:

1. All proposals must be **received from July 1, 2005 through July 15, 2005**.
2. Limit each proposal to a single rule section. Use a separate copy for each proposal.
3. Include supplementary material (photographs, diagrams, reports, etc.) if necessary to support your proposal.

Date submitted: _____ **Name:** _____ **Telephone:** _____

Representing: _____

Mailing Address: _____

Email Address: _____

1. Proposal: *Include new or revised wording, or identification of wording to be deleted. Proposed text should be in legislative format. Use underscore to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~).*

2. Statement of Problem & Substantiation for Proposal: *Note: State the problem that will be resolved by your proposal and substantiation for your proposal.*

3. Check one: ☐This proposal is original material ☐This proposal is not original material

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 3** **March 2005**

Public Hearings on 2005 WAC Changes

Public hearings will be held in two locations regarding the proposed electrical Washington Administrative Code changes which will become effective June 30, 2005. The changes made are the reflections of proposals sent in and recommendations provided, regarding those proposals, by the technical advisory committee and the Electrical Board. The dates and times for the public hearings are listed below.

5-April Yakima, L&I Office, 15 West Yakima Avenue, Suite 100	11 a.m.
6-April Tumwater, L&I Building, 7273 Linderson Way, Auditorium	10 a.m.

Electrical Board Recruitment

Three electrical board appointments are scheduled to expire in July 2005. The positions open to represent factions of the electrical industry are as follows: one certified electrician, one combination RCCD certified/electrical engineer, and one telecommunications worker. **Applications must be received no later than March 31, 2005.**

Applicants must submit a letter of interest, completed application form and a current resume to the Office of the Governor, Attn: Shana Melanson, PO Box 40002, Olympia, WA 98504-0002. Applicants must specify the position sought and should be prepared to demonstrate support from the group(s) in the electrical industry that the position represents.

Requests for copies of the applications and any questions may also be directed to Angie Wharton at (360) 902-5259 or downloaded at:

http://www.governor.wa.gov/boards/application

Job Site Must Be Free from Hazards to Perform an Electrical Inspection

When an electrical inspection is requested, the jobsite must be clear of hazards and have a safe entry to the area that is to be inspected. If an inspection is unable to be performed due to a hazardous condition the electrical contractor could be subject to a $36.40 trip fee.

To avoid a trip fee, insure that ladders used to gain entry are not damaged and are properly secured. Additional lighting may be needed if ambient lighting is not adequate to perform the inspection. The access to the site must be free of debris and vegetation must be cut back in areas were an inspection is requested. In addition, all animals must be restrained during the inspection process.

Department policies do not allow inspectors to perform the inspection if any of these conditions exist.

Preview 2005 NEC Code Changes – NEC 250.50 Grounding Electrode System

NEC Code Panel 5 made an editorial change, consistent with the NEC Style Manual, to NEC 250.50 language, requiring all grounding electrodes available on the premises to be bonded together to form the grounding electrode system, by removing the vague term “available”. The new language now refers to all grounding electrodes “present at each building”. There is an exception to making concrete-encased rebar part of the grounding electrode system in existing buildings if concrete must be disturbed to access the rebar. Several code change publications and some instructors imply that this now means a concrete encased electrode is mandatory on all new structures.

The Chief Electrical Inspector does not agree with that opinion. It is an unnecessary burden on the electrical contractor to remove concrete to bond to concrete-encased rebar on new or existing construction. Many electrical contracts are not signed until after the concrete foundation work is done. In addition, some building officials are reluctant to allow an electrical connection to the structural rebar and advocate a separate electrical conductor or additional length(s) of rebar to serve this function.

The Chief Electrical Inspector interprets "present at each building" to mean exposed and accessible for installation or use when the electrical contractor first begins work on the electrical installation or when the property owner purchases an electrical work permit. The electrical system designer may always intentionally install a Code compliant concrete-encased electrode and have it inspected prior to placing the concrete.

● When Are Fixed Generators Rated 600 Volts Or Less Required To Be Listed?

Whenever a new product standard is developed for equipment regulated under chapter 19.28 RCW, the department allows the affected manufacturers and distributors a reasonable amount of time to conform to the standard. Our April 30, 2003 deadline requiring fixed generators rated 600 volts or less to be listed/labeled (or field evaluated) was nearly five years after the publication of ANSI/UL 2200-Stationary Engine Generator Assemblies.

We require conformance for new generator equipment (or equipment modified from its original manufactured configuration) when installed after the April 30, 2003 deadline. If the equipment was compliant with appropriate Washington standards when originally manufactured or installed, it remains in compliance unless modified. Unlisted, relocated equipment manufactured before April 30, 2003 is acceptable if its date of manufacture can be documented. We will not require engine generator installations existing before the deadline to be brought into compliance with the latest standard.

Development of a new product standard or Code requirement does not make existing equipment or installations unsafe. The electrical industry is constantly improving the safety of equipment based on positive and negative installation experience and advancements in materials and technology.

● When Are Permits Required For Like-In-Kind Equipment Replacement?

RCW 19.28 defines "like-in-kind" as having similar characteristics such as voltage requirements, current draw, and function, and being in the same location. There is a common misconception that replacing **any** electrical equipment with something like-in-kind does not require a permit or inspection. This is only true for **specific Class A basic electrical work.** This work is defined as the like-in-kind replacement of a: contactor, relay, timer, starter, circuit board, or similar control component; household appliance; circuit breaker; fuse; residential luminaire; lamp; snap switch; dimmer; receptacle outlet; thermostat; heating element; luminaire ballast with an exact same ballast; or a ten horsepower or smaller motor. Except for a household appliance, all of these items are **components** of electrical equipment or systems.

A household appliance is a water heater, dishwasher, disposal, insta-hot water device, washing machine, clothes dryer, range, oven, or cook-top, and other cord and plug connected equipment listed for household use performing common functions. **A permit is required for all other like-in-kind equipment replacement**.

● Electrical Question of the Month

This Month's Question: When installed on the outside of a raceway or enclosure, the length of the equipment bonding jumper shall not exceed ____ feet and shall be routed with the raceway or enclosure. **A)** 4, **B)** 5, **C)** 6, **D)** 8

Last Month's Question: A 277/480V, 3-phase service will supply a new 20 HP, 460V, 3-phase, intermittent duty (5-minute rated) motor with a nameplate rating of 22.41 FLA. What is the calculated load in VA for this motor that will be added to the building service? Choose the best answer from the following choices: **A)** 15829, **B)** 18623, **C)** 22437, **D)** 28046.

The answer is: **A)**. References: NEC 430.22(E) refers to Table 430.22(E). In this table the ampacity for the (5-minute rated) intermittent duty motor is 85% of nameplate. The system voltage for the 460V rated motor is 480V as specified in Notes to NEC Annex D-Examples. For 3-phase systems the department uses the following voltage values for consistency when applying a round-off value for the square root of 3: 480V—3Ø=831 volts; 240V—3Ø=416 volts; 208V—3Ø=360 volts. The VA load calculation for the motor is: 22.41 x .85 x 831=15829 VA. Since no information was provided about other motors served by this system, no other assumption about load for this motor on the service conductors can or should be made.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 2** **February 2005**

Electrical Board Recruitment – Applications Due Before March 31, 2005

The Electrical Advisory Board has fourteen (14) members appointed by the Governor for a regular 4-year term. Three Electrical Board appointments are scheduled to expire in July 2005. These positions are designated to represent factions of the electrical industry as follows: one certified electrician, one combination RCDD certified/electrical engineer, and one telecommunications worker.

Interested individuals, with appropriate credentials, may apply. Incumbent members may apply for reappointment to their positions. Applications must be made using the *Application for Gubernatorial Appointment to a Board or Commission* form. Requests for copies of the application and any questions may be directed to Angie Wharton at (360) 902-5259 or downloaded at
http://www.governor.wa.gov/boards/application/default.asp

Applicants must submit a letter of interest, completed application form (above), and current resume to the Chief Electrical Inspector, PO Box 44460, Olympia, WA 98504-4460, **no later than March 31, 2005**. Applicants should specify the position sought and be prepared to demonstrate support from the group(s) in the electrical industry that the position represents.

Free Code Update/RCW – WAC Continuing Education Classes

The department still has some space available in the following free CEU classes:

PART 1: 4 hours Code Update & 4 hours RCW-WAC	PART 2: 8 hours Code Update
One Session remaining:	**8-Mar Moses Lake**, 3000 W Marina Dr, Best Western Inn
15-Feb Spokane, E 1411 Mission, Avista Bldg. Auditorium	**9-Mar Spokane**, E 1411 Mission, Avista Bldg. Auditorium
	17-Mar Kennewick, 1101 N Columbia Ctr Blvd, Red Lion

If you are interested in attending these classes, you may apply via email to ElectricalProgram@lni.wa.gov

IMPORTANT CHANGES IN THE ELECTRICAL PERMIT APPLICATION PROCESS

The L&I Specialty Compliance Services division upgraded its permitting system software on January 19, 2005. This created some modifications to the way we do business with our customers. If you use the online permitting systems EIRS and iPEP, there are no changes to your systems. The following changes are for all other customers:

Purchasing permits:

- The pre-printed numbers on the old permit application form will be meaningless for permits that are purchased after January 19, 2005. If you post a copy of the old form on the jobsite, our staff will not be able to locate that permit in our system using the pre-printed number on the form.
- The new system assigns the permit number. This will be the only number usable to contact the department regarding your electrical permit. This number will begin with "**EP**" for electrical permits. Our field staff will issue the permit number after they process your application.
- The new permit application form is multiple pages. A **fee worksheet must be completed** as a part of each application. The new form is available online at the Electrical Forms and Publication page at: **http://www.lni.wa.gov/TradesLicensing/Electrical/FormPub/Forms**
- We will continue to accept the old forms until April 1, 2005.
- You do not have a permit and are not authorized to begin work until you have confirmation from the department that your application has been processed and a valid "**EP**" number is issued as described above.

Requesting inspections:

- If your permit is not been paid for in full we will not be able to request an inspection for your job. Make sure you have all your fee dues paid in full.
- If you use the telephone, voice mail system, or fax to request inspections, make sure you leave the new permit number (beginning with "**EP**" and issued by L&I), the address of the inspection, your name, and a phone number to contact you.

Please Note: If you fax in a permit application multiple times (or to multiple offices), it will be entered and assigned a unique **EP** number each time it is received. You will be charged a separate permit fee for each application received and processed. You will then have to request a refund and will be subject to a refund processing fee and possible inspection delays.

● Preview – 2005 NEC Code Changes. Classified Locations.

Code Panel 14 deleted language in NEC 511-Commercial Garages, Repair and Storage and NEC-514-Motor Fuel Dispensing Facilities that stated the area below the surface of a Class 1, Division 1 or Division 2 location was classified the same as the area above. Since the lack of oxygen in the earth normally makes it impossible to achieve an ignitable concentration of explosive vapor, the earth below Class 1, Division 1 or Division 2 locations does not conform to the definition of classified locations found in NEC 500.5.

This is a technical correction consistent with the Code style, but **do not** make the assumption that unclassified wiring methods can now be used. The Code Panel **left all the requirements** for underground wiring methods and conduit seals intact in NEC 511.9, NEC 501.10, NEC 501.15, and NEC 514.8.

The Code Panel recognized that in some circumstances, such as a void in the earth like an electrical raceway, that there is a capacity to have a hazardous mixture of oxygen and flammable vapor from spills or leakage on the surface above.

● Sizing External Disconnects For Unit HVAC/R Equipment

If the thermal protection built into an air conditioning unit (i.e. hermetic refrigerant motor-compressor) permits continuous current flow above 156% of the equipment rated-load amperes (RLA), the branch-circuit current rating is always marked on the equipment nameplate. The branch-circuit current value is always equal or greater than the RLA. The branch-circuit current rating for a motor-compressor must be used instead of the RLA in determining appropriate ratings for branch-circuit conductors and externally mounted controllers and disconnecting means.

Multi-motor equipment or combinations of a motor(s) and other loads, supplied from a single branch-circuit, will be marked with the required supply-circuit minimum circuit ampacity (MCA) on or adjacent to the equipment nameplate. As the name indicates, minimum circuit ampacity is used to determine the required minimum rating of the branch circuit conductors.

Branch-circuit selection current and MCA are not interchangeable. If equipment is not marked with branch-circuit selection current then you must use the rated-load amperes (RLA) marked on the equipment nameplate (not MCA) to perform the calculations in NEC 440.12 when determining the appropriate rating and interrupting capacity for external disconnecting means.

● Underground Low-Voltage Landscape Lighting Requirements

We have been asked to clarify the intent of the rules relating to licensing, certification, allowable exemptions, and permits and inspections for the installation of underground low-voltage landscape lighting. WAC 296-46B-925(7) establishes a threshold for exemption for a specific type of this work and is prefaced with the qualifier "*The electrical failure of these systems does not inherently or functionally compromise safety to life or property*." This quality is mandatory for consideration for this exemption.

This rule's format was made general enough to include thermocouple derived circuits and low-voltage systems for residential vacuum systems, underground landscape sprinkler control, and residential garage door controls, along with underground low-voltage landscape lighting. (The Class 2 power source for these other systems is always integrated into the listed controller equipment.) It was the intent of the rule to allow "exempt" installation of Class 2, pre-assembled, low-voltage lighting assemblies listed for use underground. These packaged Class 2 low-voltage lighting systems with fixed numbers of luminaires can be safely installed by persons with no electrical installation knowledge or skills. Most of these systems are completely pre-wired and only need to be "planted" then plugged in. Some may allow change of location of the luminaire(s) on the conductors pre-wired to the Class 2 transformer. The Class 2, 100 VA limitations of these packaged assemblies satisfies the above safety parameter of the rule.

When an installation involves field assembly of individual lighting fixtures on properly sized conductors and selection of an appropriate Class 1 transformer or power source to supply the calculated loads, then the inherent safety of the listed Class 2 system is nonexistent. The installation must be done by licensed

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electrical contractors and certified electricians. Work in this scope is only included for 01-general journeyman, 02-residential specialty, or 06-limited energy specialty contractors and electricians. The 06-limited energy specialty is further restricted to Class 1 power-limited circuits 1000 VA, 30 volts or less.

The rules have an exemption from licensing for firms that install certain cord and plug connected equipment in WAC 296-46B-925(9) with the qualifier that "*The equipment must be a single manufactured unit that does not require any electrical field assembly except for the installation of the plug and cord*." Field installation of low-voltage lighting systems does not qualify for this exemption, even if the power source happens to be cord and plug connected. There is no exemption from permits and inspection for this work in WAC 296-46B-925(9). Field assembled underground low-voltage lighting systems require electrical work permits and inspections. Licensing, permits and inspections are not required for the specific work exempt under WAC 296-46B-925(7).

● Luminaires Near A Bathtub And In Shower Areas

NEC 410.4(D) Creates a restricted zone for cord connected luminaires, hanging luminaires, light tracks, pendants and ceiling suspended paddle fans in and near bathtubs and shower areas. This zone extends 3 feet horizontally and 8 feet vertically from the top of the bathtub rim or shower threshold. This limitation does not apply to recessed or flush mounted fixtures.

Although a flush mounted fixture may meet NEC requirements inside the restricted zone it must still meet the requirements of WAC 296-46B-410. This zone starts at 5 foot vertically from the edge of the waterline of a bathtub and extends as a 5 foot radius to the floor of the bathroom. Any fixture in this zone is required to be an enclosed luminaire and must be ground fault circuit interruption protected.

● ELECTRICAL CURRENTS Article Recommendations And Feedback

The monthly Electrical Currents articles are an efficient way for the department to inform electrical industry stakeholders about department policies and code interpretations. The newsletter has been issued monthly since January 1998 addressing electrical installations, licensing/certification, and industry safety concerns. Most of the articles written are usually derived from problems that have occurred in the field service locations and must be resolved by the Chief Electrical Inspector. We would like to have feedback through E-mail, on the Electrical Currents newsletter, and any technical issues or ideas that our customers would like to see addressed. Although all suggestions will not merit an article, all are welcome. Please E-mail your suggestion to: ElectricalProgram@lni.wa.gov.

● Electrical Question of the Month

This Month's Question: A 277/480V, 3-phase service will supply a new 20 HP, 460V, 3-phase, intermittent duty (5-minute rated) motor with a nameplate rating of 22.41 FLA. What is the calculated load in VA for this motor that will be added to the building service? Choose the best answer from the following choices: **A)** 15829, **B)** 18623, **C)** 22437, **D)** 28046.

Last Month's Question: In a 240 volt system the current draw on the feeder conductors is 110 amps. The one way length of the conductors feeding the load is 226 feet long and the wire size is stranded 1/0 aluminum USE. Does this installation comply with the minimum 3% voltage drop for feeders recommended by the NEC? A) Yes, B) No. The answer is: **B)** No. [3%×240 volts= 7.2 volts maximum dropped for a compliant feeder. VD=(2×K×I×L)÷wire circular mils=(2×21.2×110×226)÷105600 circular mils=9.98 volts.)

● Quarterly Compliance Report Text

This report lists the final judgments for: no electrical contractor's license, hiring uncertified electricians, no electrician certification, and failure to obtain necessary electrical work permits. The report is also posted on the Electrical Program website. The following firms and persons received a final judgment during the 4th quarter of 2004. A final judgment means that all rights of appeal have been exhausted and a penalty is due or has been paid.

Final Judgments of Electrical Laws
For the 4th quarter of 2004

Violator	# of Violations	Penalty
Violation - No Electrical Contractor's License		
Region 1 - North Puget Sound		
BROCK, JULIE, 227TH AVE CT E, BUCKLEY, WA	1	$ 500

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COHN, LEONARD, SHARON DR, EVERETT, WA	1	$ 500
DICKMAN, KEN M, 16TH ST, ANACORTES, WA	1	$ 500
HEWSON, ALAN D, CALHOUN RD, MONROE, WA	1	$ 500
J T CONSTRUCTION MGMT INC, NE 167TH ST, WOODINVILLE, WA	2	$ 1,000
JIMMY Z INSTALLERS, 22ND AVE SW, SEATTLE, WA	1	$ 500
MANIBUSAN, THOMAS J, GROUSE CIRCLE, FERNDALE, WA	1	$ 500
PRO-TEL SERVICES, SW GRIENT JES LN, OAK HARBOR, WA	1	$ 500
SIGN PRO, STEWART RD STE, MOUNT VERNON, WA	1	$ 500
WHITE, BRYCE L, PO BOX, STARTUP, WA	1	$ 500
WYSOCKI, JEFF, 302ND DR SE, SULTAN, WA	1	$ 500
Region 2 - King County		
DOCTOR ELECTRIC, S 177TH PL, BURIEN, WA	2	$ 1,000
HADDAD, JOSEPH, NE 4TH PL, SAMMAMISH, WA	1	$ 500
JACKSON, NELS F, 228TH AVE SE, MAPLE VALLEY, WA	1	$ 500
JOHNSON, JOSEPH, 8TH AVE SW, SEATTLE, WA	1	$ 500
MORIYAMA, KATSUICHIRO, 79TH AVE W, EDMONDS, WA	1	$ 500
ROCKY MOUNTAIN ALARM, WEST 4100 SOUTH, SALT LAKE CITY, UT	1	$ 500
SUNLAND CUSTOM HOMES, 1O5 AVE SW, VASHON, WA	1	$ 500
Region 3 - Pierce & Kitsap County & Olympic Peninsula		
BOWMAN, JASON M, 198TH AVE SE, KENT, WA	1	$ 500
COX, CHARLES V, S THOMPSON AVE, TACOMA, WA	2	$ 1,000
RHINEHART, DUSTY LEON, 230TH AVE E, ORTING, WA	1	$ 500
YORK ENTERPRIZES, NORTH 30TH ST, TACOMA, WA	1	$ 500
Region 4 - SW Washington		
BROTHER SIGN INC, 104TH ST CT S, LAKEWOOD, WA	1	$ 1,500
CASTLE ROCK ELECTRIC INC, CHICORY CT, NEWHALL, CA	1	$ 500
CI CONSULTING, 20TH ST, WASHOUGAL, WA	1	$ 500
JOHNSON'S HEATING & A/C INC, PO BOX, KALAMA, WA	1	$ 500
PFAHL, TIMOTHY M, N. 49TH STREET, SEATTLE, WA	1	$ 500
RUSSELL, DAVE, SE 9TH, OLYMPIA, WA	1	$ 500
S.M.C.I, 100TH ST. SW, LAKEWOOD, WA	1	$ 500
SHORT, DAVID, 10TH STREET, BREMERTON, WA	1	$ 500
SYPONYA, VLADIMIR, SE 175TH AVE, WASHOUGAL, WA	1	$ 500
TRI CITY ELECTRIC, S GRIBBLE, CANBY, OR	1	$ 500
Region 5 - Central Washington		
BOUFFIOU, GARY C, 25TH, KENNEWICK, WA	1	$ 500
DAVE SIMMONS CONSTRUCTION INC, KILLMORE RD, ELLENSBURG, WA	1	$ 500
PREFERRED HEATING & AC INC, PO BOX, BENTON CITY, WA	1	$ 500
SMITH, MARK, PO BOX, WALLA WALLA, WA	1	$ 500
Region 6 - Eastern Washington		
AUDIO VIDEO INOVATIONS, S GLENBROOK CT, GREENACRES, WA	1	$ 500
BLINDAUER, WILLIAM, LACROSSE, SPOKANE, WA	1	$ 500
BRITTON, JOHN, AZTEC LANE, CHENEY, WA	1	$ 500
BYUS, CHRIS, PO BOX, SPOKANE, WA	1	$ 500
CRYSTAL WATERS PUMP POWER & FI, PO BOX, PULLMAN, WA	2	$ 1,000
HILAND CONSTRUCTION, S CONKLIN, GREENACRES, WA	1	$ 500
NESBITT LANDSCAPING INC, N MARKET, SPOKANE, WA	1	$ 500
PREMIER DEVELOPMENT, N FREYA, SPOKANE, WA	1	$ 500
SCHUYLER, HARVEY, N SANDS RD, CHATTAROY, WA	1	$ 500
UNITED PUMP COMPANY, PO BOX, HAYDEN LAKE, ID	1	$ 500
WATSON, DEAN C, PO BOX, POMEROY, WA	1	$ 500
Central Office		
GLOBAL DESIGN, 48TH ST SE, EVERETT, WA	1	$ 400
MOSSANO CONSTRUCTION GEN, ILLAHEE RD NE, BREMERTON, WA	1	$ 500
MR HANDYMAN OF SNOHOMISH CNTY, HARBOUR HTS PKWY, MUKILTEO, WA	1	$ 500
PERFECT CLIMATE INC, 221ST PL NE, REDMOND, WA	3	$ 1,500
SMITH, DEWAYNE T, PETTIGREW LN, MOSES LAKE, WA	1	$ 500
SMITH, TRAVIS D, PETTIGREW LN, MOSES LAKE, WA	1	$ 500
SUMMIT LOGISTICS INC, 76TH AVE S, KENT, WA	2	$ 1,000
TELSERVICE NORTHWEST LLC, 172ND AVE SE, AUBURN, WA	3	$ 3,000
WALKER, DANIEL R, MAY CREEK RD, GOLD BAR, WA	1	$ 500
Violation - Hiring Uncertified Electrician		
Region 1 - North Puget Sound		
NETVERSANT-WASHINGTON INC, 1ST AVE S, SEATTLE, WA	2	$ 200
SMITH FIRE SYSTEMS INC, 54TH AVE E, TACOMA, WA	1	$ 100
Region 2 - King County		
MECHANICAL & CONTROL SERV INC, 16TH ST E, FIFE, WA	1	$ 100
TACOMA COMMERCIAL MAINT INC, STEILACOOM BLVD SW, LAKEWOOD, WA	1	$ 100
SUNSET ELECTRIC NW INC, PO BOX, POULSBO, WA	1	$ 500
Region 4 - SW Washington		
CAPITOL ALARM INC, HARRISON AVE NW, OLYMPIA, WA	1	$ 100
CASTLE ROCK ELECTRIC INC, CHICORY CT, NEWHALL, CA	4	$ 400
COASTAL CONSTRUCTION GRP INC, S PARK ST, ABERDEEN, WA	1	$ 100
E C COMPANY, PO BOX, PORTLAND, OR	1	$ 100
WELL DONE ELECTRIC CO, SE ROYER RD, CLACKAMAS, OR	1	$ 100
Central Office		
A C ELECTRIC SERVICE INC, W MEEKER ST, KENT, WA	2	$ 700
FURNACE STORE LLC, CITATION RD NE, MOSES LAKE, WA	1	$ 100
M T ELECTRIC INC, 456TH PL SE, NORTH BEND, WA	1	$ 400
SAFECO ELECTRIC, SE 113TH, PORTLAND, OR	1	$ 600
Violation - No Electrician Certificate		
Region 1 - North Puget Sound		
HEWSON, ALAN D, CALHOUN RD, MONROE, WA	1	$ 250
HUNTER, ROGER TEDD, NORTH RD, BOTHELL, WA	1	$ 250
MANIBUSAN, TOM, MT. BAKER HWY, BELLINGHAM, WA	1	$ 250
RICHMOND, NATHANIEL MCCRAY, JASMINE PL, MOUNT VERNON, WA	1	$ 250

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GAMBINO, VINCE S, 17TH ST E, PALMDALE, CA	1	$ 250
JOHNSON, CHARLES L, NE 86TH AVE, PORTLAND, OR	1	$ 250
MCFADDEN, SEAN P, ARBOR DR SE, LACEY, WA	1	$ 250
NARAYAN, T J, NW 87TH ST, VANCOUVER, WA	1	$ 250
O'CONNELL, DAVE, HWY 3 SW, PORT ORCHARD, WA	1	$ 250
O'CONNELL, ROBIN L, ST. HWY 3 S.W., PORT ORCHARD, WA	1	$ 250
PFAHL, TIMOTHY M, N. 49TH STREET, SEATTLE, WA	1	$ 250
RUSSELL, DAVE, SE 9TH, OLYMPIA, WA	1	$ 250
SHORT, DAVID, 10TH STREET, BREMERTON, WA	1	$ 250
SKOROHODOU, MICHAEL, N BUFFALO, PORTLAND, OR	1	$ 250
WEBBER, KENNETH W, 110TH AVE EAST, PUYALLUP, WA	1	$ 250
WILSON, CHRISTOPHER L, SE 29TH ST, SAMMAMISH, WA	1	$ 250
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DODD, JAMES A, N. HAYE, NEWMAN LAKE, WA	1	$ 250
Region 6 - Eastern Washington		
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MCRAE, JEFFREY J, S CONKLIN, GREENACRES, WA	1	$ 250
NESBITT, PAUL R JR, N MARKET, SPOKANE, WA	1	$ 250
SCHROEDER, CHARLES ALLAN, N LLOYD LN, MEAD, WA	1	$ 250
SCHUYLER, HARVEY, N SANDS RD, CHATTAROY, WA	1	$ 250
Central Office		
BATISHEV, LEE, NE 82ND AVE, VANCOUVER, WA	1	$ 250
BREEDEN, STEVE, 48TH ST SE, EVERETT, WA	1	$ 150
BURNELL, MATTHEW, NE 12 ST, VANCOUVER, WA	4	$ 400
FISCO, RICK, S. LAKE STEVENS RD, LAKE STEVENS, WA	1	$ 250
GREENBERG, BEN, 4TH DR SE, EVERETT, WA	1	$ 250
HOGAN, JEFFREY W, YOST CIRCLE NE, MOSES LAKE, WA	3	$ 750
JUDGE, BRANDON M., SE 136TH, NORTH BEND, WA	1	$ 250
MERIDIAN CENTER ELECTRIC INC, 66TH AVE EAST, PUYALLUP, WA	2	$ 500
OWENS, CHRIS, SW 129TH, BURIEN, WA	2	$ 200
SHIPOVSKIY, PAVEL, 11TH AVE, MILTON, WA	1	$ 250
SMITH, DEWAYNE T, PETTIGREW LN, MOSES LAKE, WA	1	$ 250
SMITH, TRAVIS D, PETTIGREW LN, MOSES LAKE, WA	1	$ 250
WRIGHT, GLENN MICHAEL, WRIGHT STREET, RATHDRUM, ID	1	$ 250
Violation - No Electrical Permit		
Region 1 - North Puget Sound		
AGAPE ELECTRIC INC, 200TH ST SE, SNOHOMISH, WA	1	$ 250
ALLIED SAFE & VAULT CO INC, W 2ND AVE, SPOKANE, WA	1	$ 250
C & C OLYMPIC HEATING INC, PO BOX, LYNNWOOD, WA	1	$ 250
C & R ELECTRIC INC, SW 150TH, SEATTLE, WA	1	$ 250
DIMENSIONAL COMMUNICATIONS INC, ANDERSON RD, MOUNT VERNON, WA	1	$ 250
EAGLE ELECTRIC CO, SHANGRI-LA DR, SEDRO WOOLLEY, WA	1	$ 250
EAGLE GAS MECHANICAL INC, 228TH ST SW, EDMONDS, WA	1	$ 250
EXCEL ELECTRIC & SERVICE INC, 138TH SE, BOTHELL, WA	1	$ 250
FOSTER, MICHAIA, INGRAHAM RD, SNOHOMISH, WA	1	$ 250
HOME THEATRE SPECIALTIES, ASH WAY, LYNNWOOD, WA	1	$ 250
INTER-ISLAND ELECTRIC, PO BOX, FRIDAY HARBOR, WA	1	$ 250
LAUIGUEURE, RONALD, 177TH AVE SE, MONROE, WA	1	$ 250
LIGHTNING ELECTRIC INC, RATHBONE RD, FERNDALE, WA	1	$ 250
MCDONALD, JAY, 18TH AVE NE, SEATTLE, WA	4	$ 1,000
NETVERSANT-WASHINGTON INC, 1ST AVE S, SEATTLE, WA	1	$ 250
POTELCO INC, 8TH ST E, SUMNER, WA	1	$ 250
QUINTON, RONALD D, 120TH AVE NE, KIRKLAND, WA	1	$ 250
ROYAL, FRANK, 117TH PL NE, MARYSVILLE, WA	1	$ 50
SEVEN SISTERS INC, SUNSET PARK DR, SEDRO WOOLLEY, WA	1	$ 250
SMITH FIRE SYSTEMS INC, 54TH AVE E, TACOMA, WA	1	$ 250
SUPPRESSION SYSTEMS INC, PACIFIC HWY E, TACOMA, WA	1	$ 250
WASHINGTON ENERGY SERVICES CO, THORNDYKE AVE W, SEATTLE, WA	1	$ 250
WILCO, SE 170TH PL, NORTH BEND, WA	1	$ 250
Region 2 - King County		
BUDGET WIRING INC, 42ND AVE S, TUKWILA, WA	1	$ 250
CHALLENGE ELECTRIC LLC, AUBURN WAY N, AUBURN, WA	1	$ 250

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FITCH, ZANE, S RUSTIC RD, SEATTLE, WA	1	$ 50
GATEWAY HEATING & A/C INC, AUBURN WAY N, AUBURN, WA	1	$ 250
HEATH NW INC, S 96 ST, SEATTLE, WA	1	$ 2,000
MADSEN ELECTRIC, S ORCHARD ST, TACOMA, WA	1	$ 250
MAPLE CREST ELECTRIC INC, PO BOX, KENT, WA	1	$ 1,000
MAXIMUM ELECTRIC, 265TH AVE SE, RAVENSDALE, WA	1	$ 250
NEXUS IS INC, SW 16TH ST, RENTON, WA	1	$ 250
ALARM WORKS N W, THE, PO BOX, TACOMA, WA	1	$ 250
BOONE ELECTRIC CONST INC, 110TH AVE E, PUYALLUP, WA	1	$ 250
BRINKS HOME SECURITY INC, WEST VALLEY HIWAY, KENT, WA	1	$ 1,000
GROFF'S ELECTRIC HEAT INC, S UNION AVE, TACOMA, WA	1	$ 250
POWER ELECTRICAL, 24TH AVE SW, FEDERAL WAY, WA	1	$ 1,000
PUGET SOUND CONT & ELECT LLC, 54TH AVE NW, GIG HARBOR, WA	1	$ 250
RHINEHART, DUSTY LEON, 230TH AVE E, ORTING, WA	1	$ 250
SILENT WITNESS LLC, ORTING KAPOWSIN HWY E, GRAHAM, WA	2	$ 1,000
THURMAN'S HEATING & AIR LLC, PO BOX, SPANAWAY, WA	1	$ 250
TOTAL SIGN SERVICE, 224TH ST E, GRAHAM, WA	1	$ 1,000
WALTHERS ELECTRIC, WHITMORE WY, BUCKLEY, WA	1	$ 1,000
WILDCAT ELECTRICAL SERVICE INC, 1ST ST, STEILACOOM, WA	1	$ 250
Region 4 - SW Washington		
ALL PHASE HTG & REFRIGERATION, NE EIGHTH AVE, VANCOUVER, WA	1	$ 250
BARTLETT ELECTRIC, SISKIYOU LP SE, OLYMPIA, WA	1	$ 250
CAPITOL ALARM INC, HARRISON AVE NW, OLYMPIA, WA	1	$ 250
CARLSONS HEATING & A/C INC, S PACIFIC AVE, KELSO, WA	1	$ 250
FELTONS HEATING & COOLING INC, CANADY ROAD, VADER, WA	1	$ 250
METCO INC, MERIDIAN E, PUYALLUP, WA	1	$ 1,000
PIONEER ELECTRICAL CONTRS INC, E 18TH ST, VANCOUVER, WA	1	$ 250
SAFECO ELECTRIC, SE 113TH, PORTLAND, OR	1	$ 250
TAURUS INDUSTRIES INC, 73RD AVE SE, OLYMPIA, WA	1	$ 250
WELL DONE ELECTRIC CO, SE ROYER RD, CLACKAMAS, OR	1	$ 250
Region 5 - Central Washington		
ESSCO ELECTRIC INC, PO BOX, PASCO, WA	1	$ 250
FARMERS ELECTRIC, E HEMLOCK, OTHELLO, WA	2	$ 2,000
J & M ELECTRIC INC, S LASCO LANE, MOSES LAKE, WA	1	$ 250
KURZ, ALLAN L, S TWEEDT CT, KENNEWICK, WA	1	$ 50
LIERMAN ELECTRIC, PO BOX, CONNELL, WA	1	$ 250
MASTER ELECTRIC, PARK PLACE, PASCO, WA	1	$ 250
POWER CITY ELECTRIC INC, PO BOX, PASCO, WA	1	$ 250
TED'S PLUMBING, NE 237TH AVE, BATTLE GROUND, WA	1	$ 1,750
TNT AIR CONDTNG & HEATING INC, W KENNEWICK AVE, KENNEWICK, WA	1	$ 250
TRINITY CONSTRUCTION INC, COLLINS, WEST RICHLAND, WA	1	$ 1,000
VANCE, CAROL, W 6TH AVE, KENNEWICK, WA	1	$ 250
WILSON ELECTRIC INC, ELGIN RD NE, MOSES LAKE, WA	1	$ 250
YARBROUGH ELECTRIC INC, DEFIANCE ST SE, OLYMPIA, WA	1	$ 250
Region 6 - Eastern Washington		
ALADDIN ELECTRIC INC, PO BOX, SPOKANE, WA	1	$ 250
AUDIO VIDEO INOVATIONS, S GLENBROOK CT, GREENACRES, WA	1	$ 250
B & D ENTERPRISES, PO BOX, POMEROY, WA	1	$ 250
CRITICAL POWER EXCHANGE, N 4TH STREET, COEUR D'ALENE, ID	1	$ 250
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VALLEY ELECTRIC SERVICE INC, PO BOX, SPOKANE, WA	1	$ 250
Central Office		
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BEACH ELECTRIC LLC, NW 45TH ST, SEATTLE, WA	1	$ 250
BEERS, CAROL, 123 AVE NE, KIRKLAND, WA	1	$ 50
BROWNE, KARL, PO BOX, BLACK DIAMOND, WA	1	$ 250
CDI CUSTOM DESIGN INC, KENTUCKY ST, BELLINGHAM, WA	1	$ 250
COMPASS MECHANICAL LLC, 227TH AVE SE, MONROE, WA	1	$ 250
E & E ELECTRIC INC, 35TH AVE W, BRIER, WA	1	$ 250
EAGLE SIGNS LLC, W WASHINGTON AVE, YAKIMA, WA	1	$ 250
EURO-DESIGN INC, PO BOX, MOSES LAKE, WA	2	$ 500
GARVIN ENTERPRISES INC, JIM CREEK RD, ARLINGTON, WA	4	$ 1,000
HOME ELECTRONICS INC, 87TH AVE CT E, PUYALLUP, WA	4	$ 500
HOME THEATRE SPECIALTIES, ASH WAY, LYNNWOOD, WA	1	$ 250
IAPRYNTSEV, SERGUE, BLUE GOOSE RD NE, MOSES LAKE, WA	1	$ 50
KHAN AIR LLC, NW 56TH ST, SEATTLE, WA	1	$ 250
MAXIMUM ELECTRIC INC, 265TH AVE SE, RAVENSDALE, WA	1	$ 2,000
MCCORNACK CONSTRUCTION INC, RIDGEVIEW LANE, MOSES LAKE, WA	1	$ 250
METALSMITHS INC, 220TH ST SW, MOUNTLAKE TERRAC, WA	1	$ 250
NORTH STAR ELECTRIC INC, S JACKSON ST, SEATTLE, WA	1	$ 1,000
NORTHWEST ELECTRICAL & SER INC, 29TH ST E, EDGEWOOD, WA	1	$ 1,000
POWER ELECTRIC, 11TH AVE NE, MARYSVILLE, WA	1	$ 750
PROGRESSIVE AIR SYSTEMS INC, INTERURBAN BLVD, SNOHOMISH, WA	1	$ 1,000
REC RESIDENTIAL ELECTRIC INC, PO BOX, BLACK DIAMOND, WA	1	$ 250
ROB'S ELECTRIC INC, 103RD AVE SE, EVERETT, WA	1	$ 250
SIEMENS BLDG TECHNOLOGIES INC, NE 20TH ST, BELLEVUE, WA	1	$ 250
SORENSEN, CHAD, WEST AXTON RD, BELLINGHAM, WA	1	$ 50
TATRO, DEAN, PARK CREEK RD, ELLENSBURG, WA	1	$ 50
ULYANCHUK, SERGEY, A WESTOVER BLVD, MOSES LAKE, WA	1	$ 50
VAST ELECT TECHNOLOGIES INC, NE 68TH ST, REDMOND, WA	2	$ 2,000
WHITE SECURITY SYSTEMS INC, HIWAY 99, LYNNWOOD, WA	1	$ 750

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 8 No. 1** **January 2005**

Code Update/RCW & WAC Courses - Spokane Classes Added

The department still has space and is offering the following free CEU classes:

4 hours Code Update, 4 hours RCW-WAC
20-Jan Kennewick, 1101 N Columbia Ctr. Blvd, Red Lion
15-Feb Spokane, E 1411 Mission, Avista Bldg. Auditorium

8 hours Code Update
8-Mar Moses Lake, 3000 W Marina Dr, Best Western Inn
9-Mar Spokane, E 1411 Mission, Avista Bldg. Auditorium
17-Mar Kennewick, 1101 N Columbia Ctr. Blvd, Red Lion

If you are interested in attending, you may apply via email to ElectricalProgram@lni.wa.gov

Looking For Proven & Practical Ways To Prevent On-The-Job Injuries?

Try a series of documents called *Common Ground* for some fresh ideas. *Common Ground* emphasizes hazard identification and hazard elimination specific to electrical contractors. The examples given are from contractors and electricians doing business here in Washington State. Prevent injuries by trying some of these real-world practices.

Contractors are encouraged to try at least one or more new ideas from each edition:

- Work Site Hazard Analysis
- Working De-energized
- Lockout/Tagout
- Ladder Safety
- Housekeeping

Common Ground is mailed bi-weekly in November 2004 and in January/February 2005 to electrical contractors in the state. If you did not receive copies in the mail but would like to, please contact SHARP at our address below. Published by the Safety & Health Assessment & Research for Prevention (SHARP) Program at the Department of Labor and Industries, it is also available at:
www.lni.wa.gov/Safety/Research/HealthyWorkplaces/Electrical.

Do you have an injury prevention strategy you would like to share? The purpose of sharing successful strategies is to elevate the safety performance of the electrical industry as a whole. Big or small, strategies that work for you are worth sharing because they may work for others too. Please send your safety strategies to: SHARP Program, PO Box 44330, Olympia, WA 98504. You can phone toll free at 1-88-66-SHARP or send an E-mail to SHARP@lni.wa.gov.

WAC 296-46B Timeline For Adoption

WAC 296-46B is now about half way through the adoption process. You should make the effort necessary to keep up to date on the proposed changes. All changes will affect you and the way you do business. Your failure to stay informed will likely cost you time and money. Don't let it happen to you.

January 27	Presentation to Electrical Board
April	Public Hearings
June 30	Effective date

The proposed WAC changes that will be presented to the Electrical Board are available for your use on the electrical program website:

www.Lni.wa.gov/TradesLicensing/electrical

Wiring Methods In Medical, Dental Or Chiropractic Offices Or Clinics, Outpatient Or Ambulatory Surgical Clinics, And Other Such Health Care Occupancies

Although many of these health care facilities do not require plan review, portions of them are likely to require the special wiring methods of NEC Article 517. Patient care areas are defined NEC 517.2. All of the occupancies in this article (title) are likely to contain patient care areas in which the patient may come in contact with ordinary appliances or be connected to electro-medical devices.

NEC 517.13 requires an **insulated copper** conductor to ground receptacles and fixed equipment in patient care areas. This insulated grounding conductor and the branch-circuit conductors must be installed in a **metal** raceway or in types MI, MC, or AC cables. If such cables are used, the outer metal armor or sheath must be identified as an acceptable ground return path. For metal-clad cable (MC) or armored cable (AC) this identification is "Hospital Grade", "Suitable for Health Care Facilities", or similar language on the cable tag or reel. Most manufacturers also identify the cable armor with green or a green stripe. Flexible metal conduit does not meet this requirement for metal raceway. See NEC 517.13(A) and (B) for additional details on these and other branch-circuits for patient care areas.

● Preview – 2005 NEC Code Changes

The National Fire Protection Association is available. The 2005 Code does not become effective until it is formally adopted in the WAC rules. We have set a June 30, 2005 target date for adoption of this standard in Washington. If you do not stay up-to-date on code changes, the transition between codes can result in costly corrections. We encourage you to take your required code update class before June 30th.

One of the many changes is 2005 NEC 210.8(B)(4) requiring that all 125-volt 15-and 20-amp receptacles installed outdoors in areas accessible to the public are required to be GFCI protected. The Consumer Product Safety Commission provided substantial documentation citing incidents that individuals are being electrocuted by cord and plug equipment.

● Multiple Feeders To A Building Or Other Structure

Contractors are making multiple feeders to a single-family residence in violation of 2002 NEC 225.30. Typically only one feeder is allowed to serve a single-family residence. The only exceptions are permitted in 2002 NEC 225.30(A) through (D), when the feeder building disconnecting means is installed according to WAC 296-46B-225, or when the service disconnecting means is installed according to WAC 296-46B-230. The exceptions require that if the disconnecting means is installed outside the structure it must be: on the structure or within sight and within fifteen feet of the structure supplied. Multiple overcurrent protected feeders may then be installed into the structure.

● Voltage Drop Calculations

The wide range of answers generated from the "**Electrical Question Of The Month**" in the last issue of this newsletter shows the need to establish some uniformity in the calculation method used for voltage drop problems. Like fault current calculations, there are several methods that may be used to arrive at a theoretical "voltage drop". Parameters considered can include conversion of DC resistance to AC impedance, internal cable structure, operating temperatures, and raceway material. Many of these calculations must be done on the jobsite where circuit conductor lengths and sizes are established during the installation, we base exam questions on the following (simplified) method we believe is best adaptable to the field when used as described.

The **VD=(2×K×I×L)÷wire circular mils** formula deals with only two (Al and Cu) conductor resistivity constants (K) in addition to one-way circuit length (L), load amps (I), and wire size expressed in circular mils (from NEC Chapter 9, Table 8). The constant (K-resistivity in ohms per circular mil-foot) is assumed to be **12.9** for copper wire and **21.2** for aluminum wire. We suggest you commit these values to memory. The K values are valid at 75ºC (167ºF) and constitute a conservative worst-case for the utilization of typical building wire. The alternate method using Ohm's Law and the DC resistance values in Table 8 also assumes the 75ºC (167ºF) operating temperature. Though K or DC resistance may be accurately adjusted for actual operating temperatures, and for the effects of AC self-induction, our basic electrical exam questions do not require this detail.

● Electrical Question of the Month

This Month's Question: In a 240 volt system the current draw on the feeder conductors is 110 amps. The one way length of the conductors feeding the load is 226 feet long and the wire size is stranded 1/0 aluminum USE. Does this installation comply with the minimum 3% voltage drop for feeders recommended by the NEC? **A)** Yes, **B)** No.

Last Month's Question: In a 120 Volt system the current draw on a circuit is 15 amps. The conductors feeding the load are 240 feet long one way and the wire size is stranded #10 copper THHN. What is the voltage being dropped on the conductor for the circuit? A) 8.9 Volts, B) 5.7 Volts, C) 14.7 Volts, D) 2.1 Volts The answer is: A) 8.9 Volts.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 7 No. 12** **December 2004**

Correction – Home Wiring Services, Inc. Penalties

In the November 2004 edition of the Electrical Currents, Home Wiring Services Inc. was shown to have thirteen violations for failing to obtain an electrical permit with a total penalty amount of $1,625. That was an error. Home Wiring Services had only one citation for a penalty of $250. The remaining twelve citations should have been for Home Electronics Inc. for a total penalty of $1,500.

Upcoming Stakeholder Meetings

These locations and dates are scheduled for the remaining stakeholder meetings for this year. An additional meeting has been added for the Spokane service area. Regional and Central Office staff will take questions and update stakeholders on the Electrical Program from 6:30 to 8:30 PM at the following locations:

7-Dec Tukwila, 12806 Gateway Dr, L&I Office
8-Dec Everett, 2320 California St.
9-Dec Mount Vernon, 2300 Market St, Cottontree Inn
15-Dec Tacoma, 1102 Tacoma Ave. S, Library
16-Dec Bremerton, 2400 Perry Ave, Perry Grade School
5-Jan Vancouver, 1200 Fort Vancouver Way, PUD
6-Jan Spokane, E1411 Mission, Avista auditorium

Upcoming Code Update/RCW – WAC Continuing Education Classes

The department is offering the following free CEU classes:

PART 1: 4 hours Code Update, 4 hours RCW-WAC

11-Jan Moses Lake, 3000 W Marina Dr, Best Western Inn
13-Jan Tumwater, 7273 Linderson Way SW, Auditorium
18-Jan Tukwila, 7200 Fun Center Way, Comfort Suites
20-Jan Kennewick, 1101 N Columbia Ctr Blvd, Red Lion
25-Jan Everett, 2800 Pacific Ave, Best Western Cascadia

PART 2: 8 hours Code Update

8-Mar Moses Lake, 3000 W Marina Dr, Best Western Inn
10-Mar Tumwater, 7273 Linderson Way SW, Auditorium
15-Mar Tukwila, 7200 Fun Center Way, Comfort Suites
17-Mar Kennewick, 1101 N Columbia Ctr Blvd, Red Lion
22-Mar Everett, 2800 Pacific Ave, Best Western Cascadia

Classes will be offered on a first serve sign up basis. If you are interested in attending any of these classes, you may apply via email to ElectricalProgram@lni.wa.gov

Listserv members were allowed the first opportunity to enroll in the free classes. If you do not want to miss out on other opportunities like this, sign up for the Listserv by going to http://www.lni.wa.gov/TradesLicensing/Electrical/ and clicking on Get E-Mail Updates (below the Contact Us button) and following the directions.

Allowable Use Of Class B "Random" Electrical Inspection Labels

Generally, Class B, random inspection labels [see WAC 296-46B-110(10) and RCW 19.28.006(2)(b)] may not be used on jobs where a cover inspection is necessary. However, when removable tiles in a T-bar ceiling constitute the "cover," Class B labels are acceptable for circuit extensions through or within the ceiling space. If the department does an inspection and cannot find the work, the contractor may be asked to locate the work behind the tiles.

Class B labels are available at all L&I service locations. They are sold in books of 20 for $200. After purchase the books can be split up and distributed to the contractor's service trucks or employees involved in electrical service operations within the scope of Class B work.

Septic System Electrical Installation

Physical limitations of residential on-site septic systems can prevent the required burial depth per NEC table 300.5 for schedule 40 PVC. If schedule 40 PVC is used as the wiring method and the proper depth (i.e. 18" cover) cannot be reached, the raceway must rest on the top of the tank achieving the greatest possible coverage. Any installation, where the conduit length on top of the tank exceeds 4', must use an approved wiring method (e.g. rigid metal conduit, concrete protection, etc.).

Clarification For Appeal Procedures

Appeals of department penalty actions are real court hearings held before a judge with either a court reporter or tape recorder present. Penalty appeals are conducted by an unbiased independent agency under very specific procedures found in WAC 296-46B-995. Frivolous appeals are expensive and a drain on resources that could be more productive elsewhere for all involved.

To ensure access to due process for those that seriously desire a judge's decision, individuals should submit appeals that meet the WAC required criteria:

1. Timeliness. Appeals must be received by L&I within 20 calendar days of the issue date of the department letter. Appeals will not be allowed if the appeal is received one day late;
2. Correct appeal deposit fee. A $200 certified check for **each** citation;
3. Appellants must provide a statement, at time of the appeal, saying why they disagree with the penalty action. Most appeals are received without this statement and/or supporting evidence. When the department receives clear statements or supporting documentation (copies of permits, etc.), citations can often be resolved without the formal hearing.

Any appeal received after the 20-calendar-day deadline and/or without the $200 certified check will be denied and the penalty becomes final.

IPEP And EIRS Users – Protect Your Electronic Password

The Electrical Inspection Request System (EIRS) and Internet Purchase of Electrical Permits system (iPEP) are tools that can save you time and money. You can create permits, reprint existing permits, detail your deposit account balance and activity, and initiate inspection requests and monitor inspection results. The department is continuing to develop the ability to show users any corrections that have been issued on a specific permit. Security of our (state) systems is second to none and exceeds that of many large corporations. Control of access to your accounts is your responsibility. Protect your electronic password like you would your checkbook or credit card and change the password frequently. Changing the password in either application changes it in both.

Recently, a Washington electrical contractor discovered an ex-employee and now business competitor was searching in their password protected on-line permit account (EIRS-iPEP). The electrical contractor had previously allowed this employee access to their secret EIRS-iPEP password and didn't change the password when the employee was terminated. The ex-employee was looking up active jobs and contacting builders, taking potential business. The ex-employee even further crossed the line by purchasing permits for his current business using the former employer's password and account. It's wise to remember your cash deposit account and linked EIRS-iPEP account is password protected for a reason, to protect your money and business proprietary information.

If you find a permit in your list that you did not create, contact your local L&I office immediately.

Heating, Air Conditioning and Refrigeration Outlet

NEC 210.63 requires that a 120-volt single-phase 15 or 20 amp receptacle be located within 25 feet of the HVAC/R equipment. The outlet must be at the same level (see *Electrical Currents*, October 2004, Outdoor Receptacles Accessible From Grade Level) as the equipment and must be at an accessible location for servicing of the equipment. This requirement must be met on all new installations and on some existing installations were the branch circuit feeding the equipment is a new installation. When the work being performed is only a like-in-kind replacement of an existing HVAC/R unit the service outlet in 210.63 is not required.

Electrical Question of the Month

This Month's Question: In a 120 Volt system the current draw on a circuit is 15 amps. The conductors feeding the load are 240 feet long one way and the wire size is stranded #10 copper THHN. What is the voltage being dropped on the conductor for the circuit? **A)** 8.9 Volts, **B)** 5.7 Volts, **C)** 14.7 Volts, **D)** 2.1 Volts

Last Month's Question: When the equipment grounding conductor is not part of a cable assembly, what is the minimum copper equipment grounding conductor size for 100 amp, 12,470 volt ungrounded conductors with 60 amp overcurrent protection? A) 10 AWG, B) 8 AWG, C) 6 AWG, D) 4 AWG. The answer is: C) [NEC 250.190].

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Technical Advisory Committee Membership

The following individuals made application and were selected to serve on the WAC Technical Advisory Committee for the 2004-2005 rules development cycle. See the August 2004 Special Edition of the ELECTRICAL CURRENTS newsletter for WAC development details.

POSITION	PRIMARY	ALTERNATE	POSITION	PRIMARY	ALTERNATE
Consumer	Richard Davis	Steve Nuttal	***Specialty Contr.***	Karen Peacey	*vacant*
Training School	Burt Ross	Sandra Olson	***Specialty Contr.***	Colin Smith	*vacant*
CEU Provider	Dave Perrin	Tom Baker	***Specialty Contr.***	Tena Risley	Buck Jones
Elec. Engineer	Michael Case	Bob Schneider	***Specialty Contr.***	J. R. Inman	*vacant*
Manufacturer	Joe Andre	Paul Ritter	***Journeyman***	Wayne Whitcomb	Dennis Holt
Testing Lab	Bob Eugene	Larry Todd	***Journeyman***	Janet Lewis	Jack Eidukas
L&I Inspection	Jack Knottingham	Tim Hingtgen	***Journeyman***	Tony Lewis	Bruce Reynolds
L&I Inspection	Jim Hinrichs	Don Millar	***Journeyman***	Bill Bowser	*vacant*
City Inspection	Dick Alford	Bob Lloyd	***Journeyman***	Mike Grunwald	Mark Neisler
Gen. Elec. Contr.	Miles Breneman	Leonard Whalen	***Journeyman***	Bob Vandecar	Dennis Williamson
Gen. Elec. Contr.	Jessica Ward	Paul Gray	***Specialty Elec.***	Bryan McMinn	*vacant*
Gen. Elec. Contr.	Barry Sherman	*vacant*	***Specialty Elec.***	Dale Wentworth	Robert West
Gen. Elec. Contr.	Steve Washburn	Larry Stevens	***Specialty Elec.***	Bill Neal, Jr.	*vacant*
Gen. Elec. Contr.	Jerome Geissler	*vacant*	***Electric Utility***	Dave Hanson	David Holmes
Public Agency	Randall Snell	*vacant*	***Telecom Utility***	Kevin Wilson	Cliff Sears

Upcoming Electrical Stakeholder Meetings Are Scheduled

Locations and times have been finalized for the upcoming stakeholder meetings. Regional, Central Office staff will take questions and update stakeholders on the Electrical Program from 6:30 to 8:30 PM at the following locations:

3-Nov Tumwater, 7273 Linderson Way, Auditorium
15-Nov Yakima, 2011 W Washington Av, Perry Tech
16-Nov Kennewick, 2721 W 10th Av, Benton PUD
17-Nov Pullman, 325 SE Paridise, City Hall
18-Nov Spokane, 901 N Monroe, L&I Office, Rm 4
7-Dec Tukwila, 12806 Gateway Dr, L&I Office
8-Dec Everett, 2320 California St.
9-Dec Mount Vernon, 2300 Market St, Cottontree Inn
15-Dec Tacoma, 1102 Tacoma Ave. S, Library
16-Dec Bremerton, 2400 Perry Ave, Perry Grade School
5-Jan Vancouver, 1200 Fort Vancouver Way, PUD

About the RCW-WAC Rules CD You Received In The Mail

RCW-WAC rules CD's were mailed in October. It is department policy that if any rule/statute is published for distribution, one free copy of that document must be provided to every individual/entity that is regulated by the document. The rules and statute are posted on the Electrical Website in Adobe .PDF format for viewing and printing by anyone. The department will make paper copies or additional CD's available at a minimal charge of $5.00 each.

Statistics show that the vast majority of Washington residents either own or have access to a computer. Many may feel the CD is difficult to use in the field, however the great majority of the statute and rules are administrative in nature and are not necessary in the field. Those pages that address technical issues can easily be printed from the CD or Web site and used in the field. The CD also includes every form and application that you will need for licensing, certification, continuing education, plan review, etc. This is much more information than we could afford to print and distribute to all of our stakeholders.

The CD cost about $48,000 to print and distribute. This compares to $150,000 to print and mail the RCW-WAC documents without the additional forms. The CD is clearly the most efficient distribution method. There have been no fee increases in two of the past five years in the Electrical Program because the department and the Electrical Board have been willing to utilize new technology whenever possible.

We realize that some people will be unhappy with the decision. Some always are. In addition to a few complaints, we have received many accolades for being proactive in utilizing our resources to the best

advantage and in fact doing a better job of ensuring everyone who is regulated by our laws is informed of those laws.

● Certification Must Be Shown To An Inspector

The statement on the back of your certification card is clear. "*You must be prepared to show this card to a Department of Labor and Industries inspector. You cannot allow anyone else to use this card. You may be asked to provide a second piece of identification.*"

RCW 19.28.321 requires L&I and city electrical inspectors to "*enforce the provisions of this chapter in their respective jurisdictions*." If an electrical inspector observes the work you have done or are doing under chapter 19.28 RCW, you must present your electrician or training certification and other means of identification when asked. If this request is refused the electrical contractor and administrator, and the individual worker will be subject to citation by the department.

● Approval Of Class 2 Transformer Load-Side Equipment And Devices

Unlisted Class 2 transformer load devices and utilization equipment are acceptable when all the following criteria are met:

1. The Class 2 transformer is listed.
2. The wiring method used complies with NEC 725.
3. The secondary voltage of the Class 2 transformer does not exceed 30 volts AC or 42.4 volts peak open circuit voltage.
4. The secondary side of the Class 2 transformer is protected by a 5-ampere maximum fuse or a fuse derived by dividing 100 VA by the secondary voltage whichever is less.
5. The Class 2 circuit does not supply life safety equipment or emergency egress, such as fire alarm or rescue systems or is not associated with classified (hazardous) locations.
6. The equipment and devices must be totally within the secondary of the Class 2 circuit (that is, the device is not in any way electrically connected to any other electric source).
7. A permanent marking located as near as possible to the transformer must indicate the size and type of the replacement fuse, or the fusing is integrated into the transformer assembly and the whole unit must be replaced.

● A Reproduction Of A General Journeyman Card Turns Up In Bothell

Chris G. Morris, Bonair Place, Seattle, an expired electrical trainee, creatively gave himself a quick promotion to general journeyman. The certificate the department obtained from his employer appeared to be a real journeyman card (borrowed or stolen) that has been altered. Morris received multiple double penalty citations for a fraudulent certificate and working without a current certificate. His employer terminated his employment.

The moral of the story? All electrical contractors should use the "***Look Up a Contractor, Plumber or Electrician***" link at http://www.lni.wa.gov/TradesLicensing/Contractors/HireCon/ to verify the certification status of their current (or potential) electrician or trainee employees. The worker cannot alter the certificate status in the online database. The department will take no penalty action against a contractor, administrator, or electrician that discovers this type of fraud and cooperates by providing information and evidence.

● Electrical Program Is Working With Other States

The Electrical Program is coordinating the development of electrical exams with other states. Chief Electrical Inspector, Ron Fuller, presented a proposal for other reciprocal states to join with Washington to develop comprehensive examinations with questions suitable for all states. Montana is already working with Washington and interest has been shown from other reciprocal states. Coordination with other states offers improved validity for our examinations and will help reduce the work required to update and maintain the extensive database required for examinations.

Washington currently reciprocates (01-Journeyman Certification) with Alaska, Arkansas, Colorado, Idaho, Massachusetts, Minnesota, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. Oklahoma and New Hampshire will likely join the group this year and several other states with electrical programs have expressed interest in gaining reciprocity.

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Borrowing Electricians

To loan your employees to another electrical contractor, the simplest arrangement is to release them to the other contractor and have them on that contractor's payroll for the project time period. This way there is no question of responsibilities or control.

If you retain employees on your payroll and supply labor to another contractor you must meet the same requirements as any construction employment agency. The department must make sure the intent of chapter 19.28 RCW is met. When you share labor there must be a **written contract** between the two parties **prior** to loaning the workers. The contract must state the duration of the loan period and the individual(s) involved. The contractor loaning the labor must give up the ability to recall the workers until they are released by the borrower, even though they remain on the payroll of the loaning contractor. Since the loaning contractor gives up "control" of the employees, the contract is limited to one continuous time period.

The electrical contractor borrowing the electrician has complete control of the individual during the duration of the contract. This means that the borrower must have the ability to dispatch, retain, and terminate the individual involved in the contract. The individual electrician (or trainee) must be properly certified for the work they are performing. The borrower must be a licensed electrical contractor. The contractor borrowing the labor will be held responsible for the performance and proper supervision (including affidavits of experience for trainees) of the loaned individual.

Mounting Or Supporting Nonmetallic Boxes

Save yourself the time and expense of a return trip to your jobsite to fix electrical corrections. Our inspectors would like to avoid a re-inspection trip as well. Contractors and installers need to be aware that NEC 314.43 has specific requirements for securing and supporting nonmetallic boxes.

Provisions for support of nonmetallic boxes must be outside of the box, or the box must be constructed to prevent the accidental contact of the conductors in the box and the mounting screws. Manufacturers must construct boxes to these requirements. Installers cannot field modify a nonmetallic box in a difficult mounting situation and drill holes in the sidewalls, ends, or back to secure it with screws from the inside.

Electrical Question Of The Month

This Month's Question: When the equipment grounding conductor is not part of a cable assembly, what is the minimum copper equipment grounding conductor size for 100 amp, 12,470 volt ungrounded conductors with 60 amp overcurrent protection? **A)** 10 AWG, **B)** 8 AWG, **C)** 6 AWG, **D)** 4 AWG.

Last Month's Question: "Like-in-kind" means having similar characteristics such as voltage requirements, current draw and function, and being in the same place. Like-in-kind replacement of which of the following equipment requires an electrical work permit and inspection? **A)** 7½ HP, 240V motor, **B)** household electric water heater, **C)** both A) and B), **D)** neither A) or B). The answer is: **D)** [WAC 296-46B-900(8), RCW 19.28.006(2), and RCW 19.28.101(1)]

Quarterly Compliance Report

This report lists the final judgments for: no electrical contractor's license, hiring uncertified electricians, no electrician certification, and failure to obtain necessary electrical work permits. The report is also posted on the Electrical Program website. The following firms and persons received a final judgment during the 3rd quarter of 2004. A final judgment means that all rights of appeal have been exhausted and a penalty is due or has been paid.

Final Judgments of Electrical Laws
For the 3rd quarter of 2004

Violator	# of Violations	Penalty
Violation - No Electrical Contractor's License		
Region 1 – North Puget Sound		
ALEXANDERS EXTERIOR ALL, 129TH AVE NE, LAKE STEVENS, WA	1	$ 500
CONTROL SYSTEMS, PO BOX, ISSAQUAH, WA	2	$ 1,000
CUSHMAN, GUY STEVEN, PALM AVE, EVERETT, WA	1	$ 500
DIAMOND CONSTRUCTION INC, 3RD AVE SW, SEATTLE, WA	1	$ 500
EARL, JEFF, 142ND AVE SE, RENTON, WA	1	$ 500
HARVEY, LANCE, AIRPORT WAY, SNOHOMISH, WA	1	$ 500
HINOJOSA, ROD D, FULTON ST, MOUNT VERNON, WA	1	$ 500

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HS & S INC, RONALD STREET, SANTA CLARA, CA	2	$ 1,000
HUNTER, ROGER T, NORTH RD, BOTHELL, WA	1	$ 500
MITCHELL, BRENT, PO BOX, MEDFORD, OR	1	$ 500
SKRIPCHENKO, ALEX, 129TH AVE NE, LAKE STEVENS, WA	1	$ 500
TIGER CONSTRUCTION LTD, EVERSON GOSHEN RD, EVERSON, WA	1	$ 500
WHITE, BRYCE L, PO BOX, STARTUP, WA	2	$ 1,000
WOOFENDEN, IAN, GUEMES ISLAND RD, ANACORTES, WA	1	$ 500
Region 2 – King County		
ATHANACIO, JACOB, PO BOX, OLALLA, WA	1	$ 500
BERNARD, BRIAN K, SW 162 CT, BRIER, WA	1	$ 500
BLUE DIAMOND CONSTRUCTION, 8TH AVE SW, FEDERAL WAY, WA	1	$ 500
CARMANAH TECHNOLOGIES INC, HARBOUR RD, VICTORIA, BC	1	$ 500
G T L CONSTRUCTION, SE 243RD ST, COVINGTON, WA	1	$ 500
HUYNH, HUY, 50TH AVE S, SEATTLE, WA	1	$ 500
MAXIMUM COMMUNICATIONS INC, PO BOX, TAMPA, FL	1	$ 500
MJA MECHANICAL, 116TH PL SE, RENTON, WA	1	$ 500
RICHARDSON, PETER W, 34TH AVE NW, SEATTLE, WA	1	$ 500
SCOTTY'S GENERAL CONST INC, S E 344TH, AUBURN, WA	1	$ 500
SLAGEL, DENNIS FRANK, GOWEN RD. SW, VASHON ISLAND, WA	1	$ 500
STACHOWIC, DEBORAH PAULINE, E NEWTON ST, SEATTLE, WA	1	$ 500
WATSON, JAMES, NE 170 ST, WOODINVILLE, WA	1	$ 500
WELSH, PAUL S, DRIFTWOOD DR E, SUMNER, WA	1	$ 500
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
CAPITAL PLBG & HEATING C0 INC, PO BOX, OLYMPIA, WA	1	$ 500
CLANTON, TODD, GREGORY WAY SE, OLYMPIA, WA	1	$ 500
MARSHALL, TOMMY CHARLES, MCKINLEY DR, VANCOUVER, WA	1	$ 500
PAYNE, JAMES, HIGH SIERRA LN NW, SILVERDALE, WA	1	$ 500
R COUSINEAU CONSTRUCTION, E ST SE, AUBURN, WA	1	$ 500
RUSSELL, KEVIN, S 24TH ST, TACOMA, WA	2	$ 1,000
Region 4 – SW Washington		
AIR PRO HEATING & COOLING, DOUGLAS ST, LONGVIEW, WA	1	$ 500
AMERICAN H D INC, NE 96TH AVE, VANCOUVER, WA	1	$ 500
EXPRESS IRON WORKS INC, P O BOX, NAPAVINE, WA	1	$ 500
FORECAST HEATING & A/C CORP, NE GLISAN ST, PORTLAND, OR	2	$ 1,000
GRACE W R & CO, EAST GAGE AVENUE, LOS ANGELES, CA	1	$ 500
LEGACY PROPANE VANCOUVER LLC, NE 199TH STREET, BATTLE GROUND, WA	1	$ 500
POIRIER, TAD B, 37TH ST SE, AUBURN, WA	1	$ 500
S.M.C.I, 100TH ST. SW, LAKEWOOD, WA	1	$ 500
SCHULZ, JEFFREY D, SE 44TH AVE, PORTLAND, OR	1	$ 500
SHELDEE CONSTRUCTION, NW 102ND ST, VANCOUVER, WA	1	$ 500
VOEGELE LAND DEVELOP, PO BOX, LA CENTER, WA	1	$ 500
Region 5 – Central Washington		
DIBENEDETTO, STEVEN A, S. 86TH PL., YAKIMA, WA	1	$ 500
JENNINGS, GARY A, N 29TH PLACE, YAKIMA, WA	1	$ 500
LILAC CITY DECORATIONS, EAST AUGUSTA, SPOKANE, WA	1	$ 500
LYNN SHEET METAL, E BUNCO RD, ATHOL, ID	1	$ 500
WESTMARK INDUSTRIES INC, SW MCEWAN RD, LAKE OSWEGO, OR	1	$ 500
Region 6 – Eastern Washington		
AUDIO VIDEO INOVATIONS, S GLENBROOK CT, GREENACRES, WA	1	$ 500
COMMERCIAL REALTY SERVICES, PO BOX, DAVENPORT, WA	1	$ 500
CORDES, KEITH, WOODLAND DR, NEWPORT, WA	1	$ 500
COZY AIR, E 20TH, SPOKANE, WA	1	$ 500
DERANLEAU'S, 19TH AVE, LEWISTON, ID	1	$ 500
DIRECT SATELLITE, NE 53RD ST, VANCOUVER, WA	1	$ 500
HANDY MAN, S LIBERTY LAKE DRIVE, LIBERTY LAKE, WA	1	$ 500
INSTANT SIGN FACTORY, W 2ND AVE, SPOKANE, WA	1	$ 500
LEWIS, DANIEL B, E.WILLOW SPRINGS RD, SPOKANE, WA	1	$ 500
M JOHNSON CONTRACTING CO., PO BOX, SPOKANE, WA	1	$ 500
MOUNT BAKER SILO INC., NORTHWOOD RD, LYNDEN, WA	1	$ 500
WALKER, TERRY L, W LAUREL, MEDICAL LAKE, WA	1	$ 500
Central Office		
BRIGGS, PAUL, W 1ST N, RIGBY, ID	1	$ 500
CARTER, JASON M, NW FAIRWOOD WAY, BREMERTON, WA	1	$ 500
CORSTONE CONTRACTORS LLC, PO BOX, SNOHOMISH, WA	1	$ 500
CUSHMAN & WAKEFIELD OF WA, WEST 52ND STREET, NEW YORK, NY	3	$ 1,500
E & D EXCAVATING INC, PO BOX, ARLINGTON, WA	2	$ 1,000
EXTREME HEATING & A/C INC, PO BOX, MOSES LAKE, WA	3	$ 1,500
FAST JOHN'S ELECTRIC, 14TH AVE NE, MARYSVILLE, WA	1	$ 500
HAMBLIN, GRAIG, N RAMSEY RD, RATHDRUM, ID	2	$ 1,000
HANSEN, STEVE CLINT, CADY RD, EVERETT, WA	1	$ 500
HARBOUR HOMES INC, DEXTER AVE N STE, SEATTLE, WA	2	$ 1,000
HEITHER & COMPANY, 102ND ST E, PUYALLUP, WA	1	$ 500
JOHN T HEINONEN BUILDER, NE 53RD ST, REDMOND, WA	1	$ 500
MACIAS, RICHARD P E, S 7TH AVE, YAKIMA, WA	1	$ 500
NORTH STAR SATELLITE, NORTH PITTSBURG, KENNEWICK, WA	1	$ 500
NORTHWEST BEVERAGE SERVICE, PO BOX, KENT, WA	1	$ 500
QUALITY AIR CONTROL, 18TH AVE, EVERETT, WA	7	$ 3,500
RIS-NW INC, NORTHCREEK PKWY, BOTHELL, WA	1	$ 500

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STAR HEATING INC, SE CLAY, PORTLAND, OR	1	$ 500
TELSERVICE NORTHWEST LLC, 172ND AVE SE, AUBURN, WA	10	$ 4,850
XTREME COMMUNICATIONS INC, PO BOX, TROUTDALE, OR	1	$ 500
Violation - Hiring an Uncertified Electrician		
Region 1 – North Puget Sound		
ALPHA AND OMEGA ELECTRIC LLC, 31ST AVE SE, EVERETT, WA	1	$ 100
DIAMOND CONSTRUCTION INC, 3RD AVE SW, SEATTLE, WA	1	$ 100
SUPERIOR INTERIORS, 89TH PL W, EDMONDS, WA	1	$ 100
Region 4 – SW Washington		
MARTIN BROS, INC, COMMERCIAL ST SE, SALEM, OR	1	$ 100
MR ELECTRIC OF OLYMPIA, DAYTON ST SE, OLYMPIA, WA	2	$ 200
NORTH PACIFIC ELECTRIC, BOSTON HARBOR RD NE, OLYMPIA, WA	1	$ 500
PHOENIX SIGN CO, PO BOX, ABERDEEN, WA	1	$ 100
Region 5 – Central Washington		
ELECTROCOM, 216TH ST SW, LYNNWOOD, WA	2	$ 1,000
Central Office		
AGAPE ELECTRIC INC, 200TH ST SE, SNOHOMISH, WA	5	$ 500
ARCTIC REFRIG & HEATING INC, N WENATCHEE AVE, WENATCHEE, WA	1	$ 100
BOB'S NEW CONSTRUCTION INC, NE 126TH PL, KIRKLAND, WA	1	$ 100
CARTER, JASON M, NW FAIRWOOD WAY, BREMERTON, WA	1	$ 100
DALCO ELECTRIC INC, PO BOX, BRUSH PRAIRIE, WA	1	$ 100
ELECTROCOM, 216TH ST SW, LYNNWOOD, WA	2	$ 200
FREDERICKSON ELECTRIC INC, PO BOX, PORT TOWNSEND, WA	1	$ 100
IECS INC, W MAIN ST, AUBURN, WA	3	$ 750
INTELEX INC, 3RD AVENUE SW, CARMEL, IN	1	$ 100
KIRBY ELECTRIC INC, B ST NW, AUBURN, WA	2	$ 200
NORTHWEST BEVERAGE SERVICE, PO BOX, KENT, WA	1	$ 100
NORTHWEST SECURITY SPECIALISTS, NE WILLIAM E SUTTON RD, BREMERTON, WA	1	$ 100
OSTLUND ELECTRIC INC, A ST SE, AUBURN, WA	3	$ 300
PACIFIC COAST LIGHTING INC, PO BOX, WOODINVILLE, WA	5	$ 1,800
PRO ELECTRICAL INC, S 341ST PL, FEDERAL WAY, WA	6	$ 600
PROCOM COMMUNICATIONS INC, PO BOX, PORTLAND, OR	2	$ 200
PWR CONSULTANTS & CONTRG INC, ROOSEVELT WAY NE, SEATTLE, WA	1	$ 100
RUSS HARMAN ELECTRIC CO, PO BOX 547, YAKIMA, WA	2	$ 200
TOTEM ELECTRIC OF TACOMA INC, PO BOX, TACOMA, WA	5	$ 500
TRANSTECH ELECTRIC INC, 126TH AVE SE, KENT, WA	1	$ 500
Violation - Uncertified Electrician		
Region 1 – North Puget Sound		
EARL, JEFF, 142ND AVE SE, RENTON, WA	1	$ 250
LIAN, DUANE, 99TH AVE N E, ARLINGTON, WA	1	$ 250
LITLE, LARRY L, LAKEWOOD RD, ARLINGTON, WA	1	$ 250
MINSHULL, ROSS, WOODLAND PARK AVE N, SEATTLE, WA	1	$ 250
SINGH, HARNEK, 3RD AVE SW, SEATTLE, WA	1	$ 100
STRICKLAND, TOM M, 89TH PL W, EDMONDS, WA	1	$ 250
SURIPCHENKO, ALEXANDER, 129TH AVE NE, LAKE STEVENS, WA	1	$ 250
TOLTON, TODD A, 146TH ST SE, YUKON, OK	1	$ 250
TURNER, ARLAN W, NE 97TH PL, MARYSVILLE, WA	1	$ 250
WILLIAMS, WALLACE RAY, 186TH PLACE SW, LYNNWOOD, WA	1	$ 250
WOOFENDEN, IAN, GUEMES ISLAND RD, ANACORTES, WA	1	$ 250
Region 2 – King County		
BERNARD, BRIAN K, SW 162 CT, BRIER, WA	1	$ 250
BURKE, JEFFREY A, SE 257TH ST, RAVENSDALE, WA	1	$ 100
CARPENTER, DANIEL E, ELM ST, SULTAN, WA	1	$ 500
HERAUF, JEFFREY P, 33RD AVE SE, PUYALLUP, WA	1	$ 250
MORIS, MICHEAL, BALLARD AVE, ORLANDO, FL	1	$ 100
RICHARDSON, PETER W, 34TH AVE NW, SEATTLE, WA	1	$ 250
TREVOR, JAMES, HARBOUR RD, VICTORIA, BC	1	$ 250
WATSON, JAMES, NE 170 ST, WOODINVILLE, WA	1	$ 250
WORK, JASON, HARBOUR RD, VICTORIA, BC	1	$ 250
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
ANDERSON, MATTHEW J, PO BOX, LA PINE, OR	1	$ 250
COLLADO, DAVID ANTONIE, S 100TH ST, SEATTLE, WA	1	$ 250
HOBBS, STEVEN, PO BOX, LACEY, WA	1	$ 250
MCDONALD, BENJAMIN HAROLD, MARINE VIEW DR S, DES MOINES, WA	1	$ 250
RUSSELL, KEVIN, S 24TH ST, TACOMA, WA	2	$ 200
Region 4 – SW Washington		
BEVARD, DENNIS N, NE 96TH AVE, VANCOUVER, WA	1	$ 250
DHOOGHE, JERRY M, BRIDGEPORT RD, DALLAS, OR	1	$ 250
FAZIO, GARY, SE BRIARWOOD DR, VANCOUVER, WA	1	$ 250
FICKLIN, ALBERT A, MOTTMAN RD SW, OLYMPIA, WA	1	$ 250
GRUSHEVSKIY, PETER P, SE STARK ST, PORTLAND, OR	1	$ 250
HANNA, TYLER, ILLAHEE RD NE, BREMERTON, WA	1	$ 250
HENDRICKSON, CARL A, MT BRYNION RD, KELSO, WA	1	$ 250
LEWIS, BRANDON C, BROOKS AVE, KEIZER, OR	1	$ 250
MCFADDEN, SEAN P, ARBOR DR SE, LACEY, WA	1	$ 250
MCKEE, KENNETH C, NW 102 AVE, VANCOUVER, WA	1	$ 100
MOTT, CHRISTOPHER WILLIAM, EAST 5TH ST, ABERDEEN, WA	1	$ 250
O'CONNELL, DAVE, HWY 3 SW, PORT ORCHARD, WA	1	$ 250

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O'CONNELL, ROBIN L, ST. HWY 3 S.W., PORT ORCHARD, WA	1	$ 250
PETERS, JOHANN, 14TH AVE, LONGVIEW, WA	1	$ 250
STEELE, JIM, ROSS, KELSO, WA	1	$ 250
Region 5 – Central Washington		
ANDERSON, JERRY J, 140TH PL N E, REDMOND, WA	2	$ 500
CAMPBELL, PAUL D, PO BOX, SPOKANE, WA	1	$ 250
DIBENEDETTO, STEVEN A, S. 86TH PL., YAKIMA, WA	1	$ 250
DODD, JAMES A, N. HAYE, NEWMAN LAKE, WA	1	$ 250
FREEMAN, RAY, REECER CRK., ELLENSBURG, WA	1	$ 250
MITZELFELT, PAUL A, N 15TH ST, COEUR D'ALENE, ID	1	$ 250
MONCRIEF, DANIEL JAMES, N. 29TH AVE, YAKIMA, WA	1	$ 250
NORMAN, JOHN R, FRANKFORT ST, RICHLAND, WA	1	$ 250
STARKENBURG, EVERETT M, 216TH ST SW, LYNNWOOD, WA	2	$ 500
Region 6 – Eastern Washington		
CORDES, KEITH, WOODLAND DR, NEWPORT, WA	1	$ 250
HAMSTRA, SCOTT A, NORTHWOOD RD, LYNDEN, WA	1	$ 250
SAWATZKI, BILL, S LIBERTY DR, LIBERTY LAKE, WA	1	$ 250
STRYKER, THOMAS PAUL, S GLENBROOK CT, GREENACRES, WA	1	$ 250
TRIPP, CHAD J, FREDERICK ST, POST FALLS, ID	1	$ 250
TRIPP, JERMIAH J, N 7TH, COEUR D'ALENE, ID	6	$ 1,250
VANDOREN, DENNIS, DEER LAKE RD, LOON LAKE, WA	1	$ 250
WALKER, TERRY L, W LAUREL, MEDICAL LAKE, WA	1	$ 250
Central Office		
BENSON, DANIEL D, TWIN RIVERS RD, ATHOL, ID	12	$ 3,000
BEZUS, DANIEL Y, S 357TH ST, FEDERAL WAY, WA	1	$ 250
BROOKS, ADAM, SR 525, GREENBANK, WA	1	$ 250
BROOKS, DANE, PO BOX, ARLINGTON, WA	2	$ 500
CRABB, MICHAEL J, SE RUSCLIFF, MILWAUKIE, OR	10	$ 1,900
DAHLKE, PATRICK, RAINBOW PL, SNOHOMISH, WA	1	$ 250
DALLUM, RODNEY A, PO BOX, BRUSH PRAIRIE, WA	1	$ 250
DANIELS, GERALD, 172ND AVE. SE, AUBURN, WA	11	$ 2,910
DESCHENES, MICHAEL A, 3RD AVE S, DES MOINES, WA	4	$ 1,000
DIAZ, MANUEL, 1ST ST, UNION GAP, WA	1	$ 250
ELLIOTT, JOHN C II, TWIN CEDAR LN SE, OLYMPIA, WA	4	$ 1,000
FISCO, RICK, 84TH ST NE, MARYSVILLE, WA	1	$ 250
FRITTS, MICHAEL A, NW 57TH ST, SEATTLE, WA	1	$ 250
GILES, SHAWN, SE MOLT, MILWAUKIE, OR	1	$ 250
HEINONEN, JOHN T, NE 53RD ST, REDMOND, WA	1	$ 250
HERNANDEZ, BENNY C, WILLIAM E. SUTTON RD, BREMERTON, WA	1	$ 250
HUSTON, RICKEY L, KELLY RD NE, CARNATION, WA	1	$ 250
LARSEN, PETER, 20TH ST SE, EVERETT, WA	9	$ 1,500
MACIAS, RICHARD P E, S 7TH AVE, YAKIMA, WA	1	$ 250
MADSEN, WILLIAM W, PO BOX, SHELTON, WA	1	$ 250
MARCELE, TAYLOR, 76TH AVE E, PUYALLUP, WA	1	$ 250
MARCHEFKA, JOE, 143RD PL SE, KENT, WA	1	$ 250
MAUERMAN, WILLIAM D, PO BOX, OCEAN SHORES, WA	1	$ 250
MCGLYNN, TIMOTHY W, 86TH AVE, SEMINOLE, FL	1	$ 250
MCMAHON, SHAWN P, BOULEVARD RD SE, OLYMPIA, WA	1	$ 250
NGUYEN, HONG XUAN, S WASHINGTON, SEATTLE, WA	1	$ 250
ORME, STANLEY E, PO BOX, KENT, WA	1	$ 250
POUNDS, MICHAEL L, SW 6TH ST, COLLEGE PLACE, WA	1	$ 250
ROSENLUND, RYAN, PO BOX, BATTLE GROUND, WA	1	$ 250
ROWLEY, BRUCE A, 219TH PL SE, BOTHELL, WA	1	$ 250
STEELE, TRAVIS, 180TH ST SW, LYNNWOOD, WA	1	$ 250
TAYLOR, MICHAEL W, N 20TH AVE, YAKIMA, WA	1	$ 100
TAYLOR, RYAN S, NW 58TH ST, SEATTLE, WA	1	$ 100
WEBSTER, BRADLEY JAMES, 100TH AVE NE, KIRKLAND, WA	1	$ 250
WEBSTER, DONALD, TRAMM RD N, REARDAN, WA	1	$ 250
WEND, CHRIS S, TERRY, LONGVIEW, WA	1	$ 250
WERVEN, KERMIT JOSEPH, NE 68TH ST, SEATTLE, WA	1	$ 250
WILLA, IAN S, FAIRWOOD WAY NW, BREMERTON, WA	1	$ 250
YI, CHUN YONG, ORTING KAPOWSIN HWY E, GRAHAM, WA	6	$ 600
Violation - Failure to Post/Obtain an Electrical Permit Prior to Beginning Work		
Region 1 – North Puget Sound		
ALPHA AND OMEGA ELECTRIC LLC, 31ST AVE SE, EVERETT, WA	1	$ 250
AUST CONSTRUCTION & ELECT LLC, W 15TH PLACE, KENNEWICK, WA	1	$ 250
BAYWEST MULTITECH COMM, 145TH DR SE, SNOHOMISH, WA	1	$ 250
BLITZ ELECTRIC, 19TH AVE SE, EVERETT, WA	1	$ 250
CLARK'S ELECT / PHOTOVOLTAIC I, 250TH ST NW, STANWOOD, WA	1	$ 1,500
DAY/NITE PLUMBING & HEATING, 13TH AVE W, LYNNWOOD, WA	1	$ 250
DONNELSON ELECTRIC INC, JIM CREEK ROAD, ARLINGTON, WA	1	$ 250
EPIC ELECTRIC INC, PO BOX, SNOHOMISH, WA	1	$ 250
EYE ELECTRIC, MASON ST., BELLINGHAM, WA	1	$ 250
FARMERS EQUIPMENT CO INC, 19TH ST, LYNDEN, WA	1	$ 250
FISHER, DAVID, PO BOX, GREENBANK, WA	1	$ 50
G & S HEATING CO INC, E MAIN ST, MONROE, WA	1	$ 250
HYDRO MECHANICAL INC, A HAMMER DR, BELLINGHAM, WA	2	$ 500
IDEAL SIGNS, PO BOX, LYNNWOOD, WA	1	$ 250

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JAMES, SCOTT, 62ND AVE NE, ARLINGTON, WA	1	$ 250
LEA COM TELECOM, AURORA AVE N, SEATTLE, WA	2	$ 1,250
MEYER SIGN & ADVERTISING CO, HWY 99 S, MOUNT VERNON, WA	1	$ 250
NORTH PARK HEATING INC, BALLINGER WAY N E, SEATTLE, WA	1	$ 250
OLYMPIC SEC & COMM SYS INC, PO BOX, ARLINGTON, WA	1	$ 250
SINGLETON, TOM, SCURLOCK RD, FREELAND, WA	1	$ 50
SNOHOMISH ELECTRIC INC, PO BOX, SNOHOMISH, WA	1	$ 250
STRUCTURED MEDIA SOLUTIONS INC, 57TH AVE CT NW, GIG HARBOR, WA	1	$ 250
TRIAD ELECTRICAL CONTRS INC, HUMBODLT ST, BELLINGHAM, WA	1	$ 1,000
UNITED ELECTRIC CONTRS INC, S 2ND AVE A, EVERETT, WA	1	$ 1,000
WEAR, CHRIS, 123RD AVE NE, LAKE STEVENS, WA	1	$ 50
Region 2 – King County		
ADT SECURITY SERVICES INC, NORTHCREEK PKWY N, BOTHELL, WA	1	$ 500
ALTERNATIVE HEATING & COOLING, 188TH ST SE, SNOHOMISH, WA	1	$ 250
AMKOR ENTERPRISES INC, PRINCETON CT, LAKE OSWEGO, OR	1	$ 250
C T R ELECTRIC INC, PO BOX, KENT, WA	1	$ 250
CHRISTIAN, POTRA, 108TH AVE SE, KENT, WA	1	$ 250
CULBERTSON SIGN SERVICE LLC, 122ND ST E, TACOMA, WA	1	$ 250
E H S LLC, STONE AVE N, SEATTLE, WA	1	$ 250
E S & A INC, OAKPATCH RD, EUGENE, OR	1	$ 2,000
EVERGREEN ELECTRICAL SRVCS INC, 60TH AVE WEST, EDMONDS, WA	1	$ 1,000
GELINAS, DAVID, SKIPLEY RD, SNOHOMISH, WA	1	$ 50
GENESEE FUEL&HTNG CO INC, PO BOX, SEATTLE, WA	1	$ 250
GREG'S ELECTRICAL SERVICES INC, SE 46TH WAY, ISSAQUAH, WA	1	$ 250
GUARDIAN SECURITY SYSTEMS INC, 1ST AVE S, SEATTLE, WA	1	$ 1,000
KOVAL, VLADIMIR, 104TH ST E, BONNEY LAKE, WA	1	$ 50
MCLAUGHLIN, DONALD, 4TH AVE SW, SEATTLE, WA	1	$ 50
NEON SIGN SYSTEMS INC, URSULA PL S, SEATTLE, WA	1	$ 1,000
NIKOLSKY, ALEX, MILITARY ROAD SOUTH, AUBURN, WA	1	$ 50
PACIFIC COAST INDSTRL LTG INC, PO BOX, WOODINVILLE, WA	1	$ 250
PACIFIC FIRE AND SECURITY INC, POPLAR PLACE S, SEATTLE, WA	1	$ 250
POWER ELECTRICAL, 24TH AVE SW, FEDERAL WAY, WA	1	$ 250
PUREWAL, PAUL, 132ND AVE SE, KENT, WA	1	$ 50
SECURITY PLUS LLC, CANYON RD E, PUYALLUP, WA	1	$ 250
SERVICE COMMUNICATIONS INC, WILLOWS RD NE, REDMOND, WA	1	$ 250
SIGN ASSOCIATES INC, 176TH AVE NE, REDMOND, WA	1	$ 250
SINGH, RASHPAL, 34 PL W T, LYNNWOOD, WA	1	$ 50
T&D HEATING INC, CEDARBOUGH LP., ARLINGTON, WA	1	$ 250
UNITED SYSTEMS INC, EVERGREEN WAY, EVERETT, WA	1	$ 250
YAMASHITA, TAKAO, 51 AVE SW, SEATTLE, WA	1	$ 50
Region 3 – Pierce & Kitsap County & Olympic Peninsula		
ADVANCED HTG SOLUTIONS & CONTR, PO BOX, ORTING, WA	1	$ 250
ALL STAR ELECTRIC, 50TH AVE E, TACOMA, WA	1	$ 250
BALL, MARK, 112 ST E, BUCKLEY, WA	1	$ 50
CHIN'S ELECTRIC INC, 13TH PL SW, FEDERAL WAY, WA	1	$ 250
EAGLE SYSTEMS & SECURITY INC, NE 131ST, KIRKLAND, WA	1	$ 250
JW ELECTRIC CONSTRUCTION, PO BOX, SPANAWAY, WA	1	$ 250
OLYMPIC WIRING INC, PROVOST ROAD NW, SILVERDALE, WA	1	$ 250
PUGET SOUND CONT & ELECT LLC, 54TH AVE NW, GIG HARBOR, WA	1	$ 250
SILENT WITNESS LLC, ORTING KAPOWSIN HWY E, GRAHAM, WA	3	$ 1,250
SUMNER HEATING INC, PO BOX, SUMNER, WA	1	$ 250
TOTEM ELECTRIC OF TACOMA INC, PO BOX, TACOMA, WA	1	$ 250
Region 4 – SW Washington		
CARTER, WILLIAM B, PROVOST RD NW, SILVERDALE, WA	1	$ 250
CHANEY, SKYE L, NE 387TH AVE, WASHOUGAL, WA	1	$ 50
COASTAL CONSTRUCTION GRP INC, S PARK ST, ABERDEEN, WA	11	$ 2,750
CORDOVA ELECTRIC INC, NE 28TH ST, VANCOUVER, WA	1	$ 250
ENGINEERED CONTROL SYSTEMS INC, N PERRY, SPOKANE, WA	1	$ 1,000
GRAYS HARBOR STAR ELECTRIC, W 2ND ST, ABERDEEN, WA	13	$ 1,625
HIGHLIGHT SIGN CORP, PO BOX, TIGARD, OR	2	$ 500
HODGES, KEITH, OLD HWY 99 SE, OLYMPIA, WA	1	$ 250
MILLENNIUM ELECTRIC, NW 9TH CIRCLE, CAMAS, WA	1	$ 250
PACIFIC AIR INC, MARTIN WAY, OLYMPIA, WA	1	$ 250
PHOENIX SIGN CO, PO BOX, ABERDEEN, WA	1	$ 1,000
POWER SYSTEMS, NW 114TH ST, VANCOUVER, WA	1	$ 250
R J ASHTON ELECTRIC LLC, PO BOX, BATTLE GROUND, WA	1	$ 250
RAKOZ ELECTRIC INC, BISHOP RD, CHEHALIS, WA	2	$ 1,250
SAFECO ELECTRIC, SE 113TH, PORTLAND, OR	1	$ 250
SILENT WITNESS LLC, ORTING KAPOWSIN HWY E, GRAHAM, WA	1	$ 500
SUN GLOW INC, SE 105TH AVE, PORTLAND, OR	1	$ 250
Region 5 – Central Washington		
ALL-PHASE ELECTRIC, N 6TH AVE, YAKIMA, WA	1	$ 250
BRASHEAR ELECTRIC INC, COLUMBIA PK TRAIL STE 204, RICHLAND, WA	1	$ 1,250
CALAWAY, COURTNEY, GLADE ROAD NORTH, PASCO, WA	1	$ 250
DELTA HEATING & COOLING INC, WELLSIAN WAY, RICHLAND, WA	1	$ 250
EFFICIENT HEATING & COOLING, E PERKINS, KENNEWICK, WA	1	$ 250
ELECTROCOM, 216TH ST SW, LYNNWOOD, WA	1	$ 1,000
FIRE PROTECTION SPEC LLC, N VISTA RD, SPOKANE, WA	1	$ 1,000

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LILAC CITY DECORATIONS, EAST AUGUSTA, SPOKANE, WA	1	$ 250
M S I CONSTRUCTION INC, S 18TH AVE, YAKIMA, WA	1	$ 250
MARTINEZ, DAN, BADGER LN, MOXEE CITY, WA	1	$ 250
SALAZAR SPECIALIZED SERVICES, PO BOX, YAKIMA, WA	1	$ 250
TED'S PLUMBING, NE 237TH AVE, BATTLE GROUND, WA	1	$ 1,000
THERMOTECH, W 21ST AVE, KENNEWICK, WA	1	$ 250
YOUNG, JAYSON, SHADBOLT RD., YAKIMA, WA	1	$ 50
Region 6 – Eastern Washington		
AUDIO VIDEO INOVATIONS, S GLENBROOK CT, GREENACRES, WA	1	$ 250
BROTHERS ELECTRIC, N NEWPORT HWY, SPOKANE, WA	1	$ 250
BULLET'S ELECTRIC, E 2ND AVE, COLVILLE, WA	1	$ 250
CAMTEK INC, E 57TH AVE, SPOKANE, WA	1	$ 1,000
COZY AIR, E 20TH, SPOKANE, WA	1	$ 250
DERANLEAU'S, 19TH AVE, LEWISTON, ID	1	$ 250
DIRECT SATELLITE, NE 53RD ST, VANCOUVER, WA	1	$ 250
K T U OF SPOKANE INC, PO BOX, SPOKANE, WA	1	$ 250
MAKUS, FRED, FOXRIDGE, MEDICAL LAKE, WA	1	$ 50
MIKE'S HEATING & A/C INC, 9TH ST, LEWISTON, ID	1	$ 250
MOUNT BAKER SILO INC., NORTHWOOD RD, LYNDEN, WA	1	$ 250
MUZAK LLC, LAKEMONT BLVD, FORT MILL, SC	1	$ 2,000
S & R HEATING INC, N YALE ROAD, MEAD, WA	2	$ 500
SUNDANCE GOLF COURSE, N. NINE MILE RD, NINE MILE FALLS, WA	1	$ 250
Central Office		
A&B ELECTRIC INC, E DONELSON, KENNEWICK, WA	1	$ 250
ACTIVE ELECTRIC CORP, 196TH SW, LYNNWOOD, WA	1	$ 250
ADT SECURITY SERVICES INC, NORTHCREEK PKWY N, BOTHELL, WA	1	$ 250
ALL SEASONS HEATING & A/C INC, PO BOX, YAKIMA, WA	1	$ 250
ALLSTATE ELECTRIC INC, EVERGREEN WAY, EVERETT, WA	1	$ 250
ARIES ELECTRIC OF SHELTON INC, PO BOX, SHELTON, WA	1	$ 250
AUTOMATED CONTROLS, DES MOINES MEM DR, SEATTLE, WA	1	$ 250
BRACHTENBACH, TRACY FL, BLUE SPRUCE LN, NACHES, WA	1	$ 250
CASCADE SIGN & DESIGN, WELLSIAN WAY, RICHLAND, WA	1	$ 250
COCHRAN INC, PO BOX, SEATTLE, WA	1	$ 1,000
DEPENDABLE HEATING & A/C SRVC, EVERGREEN WAY, EVERETT, WA	1	$ 250
DICK'S HTG & A/C OF WENAT INC, 9TH NE, EAST WENATCHEE, WA	1	$ 250
DOMINION ELECTRIC, S LINCOLN, SPOKANE, WA	1	$ 250
DOUGS ELECTRIC, NE 116TH ST, REDMOND, WA	1	$ 250
DOYLE ELECTRIC INC, DELL AVE, WALLA WALLA, WA	1	$ 250
DUTCH ELECTRIC INC, LOCUST WAY, LYNNWOOD, WA	1	$ 250
E & E ELECTRIC INC, 35TH AVE W, BRIER, WA	1	$ 250
ELECTRI CITY INC, OTHELL HWY, MILL CREEK, WA	1	$ 250
FERRIN ELECTRIC INC, PO BOX, MILL CREEK, WA	1	$ 250
FUTURE ELECTRIC INC, PO BOX, WENATCHEE, WA	1	$ 250
HANSON ELECTRIC OF CHELAN INC, PO BOX, CHELAN, WA	1	$ 250
HOME WIRING SERVICES INC, E GAMEFARM RD, KENNEWICK, WA	13	$ 1,625
JET ELECTRIC, S MERIDIAN, PUYALLUP, WA	1	$ 250
K & M ELECTRIC CO, PINE ST, EVERETT, WA	1	$ 250
KV ELECTRIC, PO BOX, SILVANA, WA	1	$ 250
LEGACY CONSTRUCTION GROUP INC, LASCO LANE NE, MOSES LAKE, WA	1	$ 250
LIVEWIRE TECHNOLOGIES LLC, SW 74TH AVE, TIGARD, OR	1	$ 250
M & M HARRISON ELECTRIC CO, PO BOX, COLFAX, WA	1	$ 250
MCGINTY ELECTRIC CO INC, SHORT ST, EVERETT, WA	3	$ 750
MCKINLEY ELECTRIC INC, PO BOX, KINGSTON, WA	1	$ 250
MODULAR ELECTRIC INC, PO BOX, KIRKLAND, WA	1	$ 250
POINTER ELECTRIC INC, RECTOR RD, BOW, WA	1	$ 250
POWER ELECTRICAL, 24TH AVE SW, FEDERAL WAY, WA	2	$ 500
PRIME ELECTRIC INC, SE 26TH ST, BELLEVUE, WA	1	$ 1,000
PRO VOLTAGE, SOPER HILL RD, EVERETT, WA	2	$ 500
R & R ELECTRIC SERVICES, E CENTRAL, SPOKANE, WA	1	$ 250
RELIABLE ELECTRIC, PO BOX, OLYMPIA, WA	1	$ 250
RESER'S FINE FOODS, N INDUSTRIAL WAY, PASCO, WA	1	$ 250
ROEDER, RICHARD, RIVERBOTTOM RD, ELLENSBURG, WA	1	$ 50
RUSSELL WATERGARDENS & NURSERY, NE REDMOND FALL CITY RD, REDMOND, WA	1	$ 250
S & W ELECTRIC INC, E FRANCIS, SPOKANE, WA	1	$ 250
S T M A ELECTRICAL SERVICES, PO BOX, MCKENNA, WA	1	$ 250
SLEATER, CHUCK JR, DELWARE AVE, RICHLAND, WA	1	$ 50
SOUTH SOUND ELECTRIC, CEDAR FLATS RD SW, OLYMPIA, WA	1	$ 250
SPOKANE SECURITY SYSTEMS INC, N PINES RD, SPOKANE, WA	1	$ 250
SUMMIT ELECTRIC INC, 261ST ST NW, STANWOOD, WA	1	$ 250
TINT PLUS SIGNS PLUS, N FOREST ST, BELLINGHAM, WA	1	$ 250
UNITED ENERGY TECHNOLOGY INC, S. 341ST PL, FEDERAL WAY, WA	1	$ 250
VALLEY ELECTRICAL CONST INC, 109TH AVE SE, AUBURN, WA	1	$ 250
VARNELL ELECTRIC INC, 95TH AVE NE, LAKE STEVENS, WA	1	$ 250
WHITE SECURITY SYSTEMS INC, HIWAY 99, LYNNWOOD, WA	1	$ 250

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 7 No. 10** **October 2004**

Electrical Stakeholder Meetings Will Be Scheduled In 11 Locations

During November, December and January we will have central office staff (the Chief or Technical Specialists, and the Administrative Staff) available for information sharing and questions at electrical stakeholder meetings in **Tumwater** (November 3rd), **Yakima** (November 15th), **Kennewick** (November 16th), **Pullman** (November 17th), **Spokane** (November 18th), **Tukwila** (December 7th), **Everett** (December 8th), **Mount Vernon** (December 9th), **Tacoma** (December 15th), **Bremerton** (December 16th), and **Vancouver** (January 5th). The meetings will be scheduled from 6:30 PM to 8:30 PM and will not include formal technical instruction or electrical CEU's. The locations will be announced on the Electrical Listserv and at the Regional Service Location offices. If you are interested in attending, please join the Listserv at:

http://www.lni.wa.gov/Main/Listservs/Electrical.asp

Trainees Have A Time Limit For Submitting Affidavits Of Experience

A trainee must submit an affidavit of experience for all work performed in the previous certification period within 30 days of renewing the training certificate. Affidavits processed outside of this window have an additional processing fee ($44.90) and may not be verifiable (acceptable) for training credit. Make sure your affidavits are accurate. WAC 296-46B-985(4) establishes a civil penalty and a reduction of up to 2,000 training hours for making a false statement or material misrepresentation on an affidavit.

Outdoor Receptacles Accessible From Grade Level

What is acceptable as accessible at grade level? NEC 210-52(E) requires at least one receptacle outlet, not more than 2.0 m (6½ ft) above grade level, to be be installed at the front and back of the dwelling. "*Accessible at grade level*" does not mean that the receptacle must be reached while your feet are on the ground. If an exterior deck has steps that provide access directly to the ground, an outside GFCI protected receptacle on the deck will satisfy the requirement and allow the user safe access to electricity. To answer the question "How high can the deck be above grade?" we will apply the existing 6½ ft limitation already in the code.

Interim WAC Rule Revisions Will Be Effective November 22, 2004

The emergency rules effective August 2nd (posted in the August 2004 edition of this newsletter) and two other revisions in the interim package will be effective November 22, 2004. The complete text of these revisions is on our Web site at: http://www.lni.wa.gov/LawRule/WhatsNew/Proposed/default.asp. The interim changes cover:

- Specific like-in-kind sign maintenance included in the Class A basic electrical work category.
- General or specialty administrator or electrician certification or status as a qualified apprenticeship instructor qualifies instructor applicants for continuing education instructor approval.
- The term "independent electrical power producer" is formally defined in relation to exempt status.
- A provisional electrical work permit label is created to allow electrical work to begin immediately and follow-up with a normal permit within two working days. (More details will be covered in future issues of this newsletter.)

Class B Basic Electrical Inspection Labels

Class B basic electrical work permits were created to reduce the cost to the customer for "*Electrical work that requires minimal electrical circuit modifications and has limited exposure hazards.*" The definition of Class B basic electric work is in RCW 19.28.006 and the specific rules for use of Class B labels are found in WAC 296-46B-110(6) through (10). The labels are sold in a book of 20 for $200. After being purchased, they can be split up and dispersed throughout the contractor's crew.

Each label has two parts; both parts must be filled out before the work is begun. The jobsite part must be affixed to the panel before starting the installation. The contractor part must be sent to the address printed on the label within 15 working days from the initial use. Once filled out the Class B label is an active permit and is then subject to a random inspection process.

Examples of work that can be done under a Class B label are: installing two surface or fished outlets to an existing bedroom circuit, adding an outdoor receptacle to an existing circuit, replacing a unit heater with a "like in kind" heater, or replacing a motor larger than ten horsepower. Refer to RCW 19.28.005(12) for the definition of "like in kind". There are no refunds on Class B labels. If you apply a Class B label on work that is not allowed or use them in error in another inspection jurisdiction, you will be responsible for purchasing a standard permit and will forfeit the value of the Class B label.

● Satellite Dishes – Telecommunications Work

The most common question we get about telecommunications installations involves customer satellite dish and conventional antenna systems receiving a telecommunications service provider's signal. All receiving equipment is on the customer side of the telecommunications network demarcation point and under the jurisdiction of RCW 19.28.400 and .420. A telecommunications contractor license is required for firms that do this work, including all or part of the dish (antenna) installation, cabling from the dish to the structure, and installation of the necessary conductors and interface equipment in or on the building.

Installations in one- and two-family dwellings and within the units of multi-family dwellings are exempt from the permitting and inspection. Permits and inspections are required (in other than one- and two-family dwellings) for installations of greater than 10 telecom outlets, for all backbone installations, and all fire barrier penetrations. A rooftop (or surface) dish system is a backbone installation (and most likely a penetration of a fire barrier) and requires permitting and inspection in other than one- and two-family dwellings.

● Protect Your Investment – Verify Your Contractor, Electrician, or Plumber Is Legal

A new "***Look Up a Contractor, Electrician or Plumber***" site was launched June 30, 2004. This site provides customers with the ability to verify construction and electrical contractors and tradesmen in the Plumbing and Electrical fields. Contractors should use this site to verify the certification status of their current (or potential) electrician or trainee employees to avoid the possibility of receiving citations for employing uncertified or expired persons. Electricians, Administrators and Master Electricians can check to see what courses have been credited to their record(s) for continuing education requirements. The site can be visited by clicking on the link "***Look Up a Contractor, Plumber or Electrician***" located on the Labor and Industries Web site at: http://www.lni.wa.gov/TradesLicensing/Contractors/HireCon/.

● Update. 2004-2005 Chapter 296-46B WAC – Rule Process

The 2004-2005 electrical rule revision process has begun. You can monitor the schedule, proposals and actions on the Electrical Listserv (www.lni.wa.gov/Main/Listservs/Electrical.asp). The members of the Technical Advisory Committee (TAC) were notified October 1st and announced October 7th. Proposals for change will be accepted until October 15th. The TAC will meet on November 10th and 11th to consider action on proposals. About November 17th the report on proposals will be published (Electrical Listserv) for a public review and formal comment period that ends on December 1st. The department will present the final draft to the Electrical Board at their January 27th meeting. Tentatively, public hearings will be held in early April, adopted in late April, and effective date on June 30, 2005.

● Electrical Question of the Month

This Month's Question: "Like-in-kind" means having similar characteristics such as voltage requirements, current draw and function, and being in the same place. Like-in-kind replacement of which of the following equipment requires an electrical work permit and inspection? **A)** 7½ HP, 240V motor, **B)** household electric water heater, **C)** both A) and B), **D)** neither A) or B).

Last Month's Question: The required grounding conductor for metal television satellite dish receiving antennas and metal structures supporting them must be connected to the grounding electrode system of the building or structure served with a conductor not smaller than **A)** 12 AWG copper, **B)** 10 AWG copper, **C)** 8 AWG copper, **D)** 6 AWG copper. The answer is **B)** [NEC 810.21(H) and 821.58(A)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 7 No. 9** **September 2004**

DEADLINE!! 2004-2005 Chapter 296-46B WAC – Rule Process

The department has chosen to delay beginning the rule revision process for Chapter 296-46B WAC this year until stakeholders have an opportunity to review the new 2005 National Electrical Code (NEC). The 2005 NEC will be widely available September 15th. **The department will open the proposal period for rule change September 15, 2004. Proposals must be received by October 15, 2004.** Details of the process are in the August WAC SPECIAL EDITION of this newsletter at: www.lni.wa.gov/TradesLicensing/Electrical/WhatsNew/. A proposal form is now available on the Electrical Program website at: www.lni.wa.gov/TradesLicensing/Electrical/WhatsNew/RuleDev/. Using this form, your proposals to WAC 296-46B must be submitted electronically (e.g. compact disc, floppy disk, or as an email attachment sent to electricalprogram@lni.wa.gov). The Electrical Listserve will be used to keep stakeholders informed of the progress of the rule revision.

Continuing Education Classes From The Department

The Electrical Program is planning inspector training for the next two years. We will allow space for our customers to join in the technical training we provide for our staff. We will have two one-day 2005 NEC code update classes this winter. Subscribers to the "Listserv" receive first notice of the space-available training dates and locations and the extra spaces usually fill in the first 48 hours. You should join our "Listserv" and watch for the opportunities for future free training presented by the Electrical Program. See the following article for details on how to subscribe to the "Listserv." Do not miss this great opportunity.

Subscribe To The Electrical Listserv – Keep Up-To-Date

The Electrical Listserv (*Washington State Electrical Program Updates*) is available to everyone with an interest in the electrical industry and the activities of the Electrical Program and Electrical Board. The "Listserv" is the best way to keep current with changes to the electrical requirements in Washington. "Listserv" members receive up to date information via E-mail links and a copy of the monthly *ELECTRICAL CURRENTS* newsletter. Members may opt out of the "Listserv" at any time. You may join the "Listserv" (Link: "*Get Electrical Updates by E-mail*") at our Website.

http://www.lni.wa.gov/Main/ContactInfo/TradesLicensing/Electrical.asp

Work Allowed On Elevators By Licensed Electrical Contractors

Questions generated by our original (June 2004) announcement about the elevator mechanic license show we need to be more specific about jurisdictional boundaries. The changes to the elevator law and rules created the license and qualifications but did nothing to change the historical scope of work for electricians or elevator mechanics. The elevator mechanic license is required for installation, alteration and maintenance work on elevator and conveyance equipment. An appropriate electrical contractor license is still adequate for electrical installation and maintenance of all equipment, conduit and wire from the original circuit overcurrent device to the control panel for the elevator or conveyance including any required shunt trip wiring. An electrical contractor must install the branch circuit to the elevator controller for the car light and install the circuits and equipment for the pit light and pit receptacle. A licensed elevator mechanic must be present to assure safe, legal access to this space for maintenance work. The electrical contractor may not make any connections inside the elevator controller.

September 30, 2004 Deadline For Licensing Required To Install And Wire Elevators

Under revisions to chapter 70.87 RCW and chapter 296-96 WAC new requirements went into effect requiring most elevator work to be performed only by licensed elevator mechanics that are employed by licensed elevator contractors. September 30, 2004 is the last day that qualified elevator mechanics and contractors can apply for a license and request that the state elevator licensing test be waived. Actual possession of a license will be required as of October 1, 2004 to perform most installation, alteration and maintenance work on elevators and other conveyances. For questions, please contact the L&I Elevator Section at 360-902-6130 or at elevatorsect@lni.wa.gov. More information can be found at www.elevators.lni.wa.gov.

More Information On "Rain Tight" EMT Fittings

This is a follow-up to an article originally printed in this newsletter August 2003 and titled "Listed EMT Compression Fittings Marked Raintight." Several manufacturers now make listed compression-type EMT fittings for "wet locations" and "rain tight" applications in up to 1-inch trade sizes. Electrical manufacturers may use any approved laboratory to list their product, so there may be other listed fittings of this type available in the marketplace. It is the installer's responsibility to provide evidence that the fittings they use are approved for the environment in which they are installed. Look for the "wet locations" or "rain tight" marking on the container and the listing mark on the fitting.

Lighting Maintenance and Retrofit Work

The scope of work for the nonresidential lighting maintenance and lighting retrofit (07A) specialty is strictly *"limited to working within the housing of existing nonresidential luminaires for work related to repair, service, maintenance of luminaires and installation of energy efficiency lighting retrofit upgrades..."*

The only work an unlicensed firm or uncertified worker may perform on an electrical luminaire is lamp replacement. Most work performed by 07A electrical contractors is required to be permitted and inspected. In addition to permitting and inspection, an electrical plan review is necessary for all new and replacement (i.e. except for exact same replacement of ballasts) work in educational, institutional, and medical facilities. See WAC 96-46B-920(2)(h) for the complete scope of work.

The department will issue citations and penalties to: unlicensed firms and uncertified individuals found to be doing any work or maintenance on a luminaire (other than lamp replacement) and firms who fail to obtain a required electrical permit or plan review prior to beginning work.

iPEP and EIRS Users – Necessary Information To Help Ensure Timely Inspections

Thanks to all of you using the iPEP and EIRS online systems to purchase permits and request inspections (38% of all permit sales and 30% of inspection requests). When using these tools it is important to know how to get inspection information to the inspector(s) as clearly as possible.

When you purchase the permit online, please give an accurate description of the job and it's components. This information is recorded in the field named "**Installation Description**". Repeating the line-item fee information in this field does not help the inspector identify the work. (e.g. Rather than including "*1-5 circuits*" as the installation description, include "*one new 20 amp, 120 volt circuit from service panel to copy machine in managers office*").

When you request the inspection online, give descriptive information in the "**Comments**" or "**Request Description**" field to let the inspector know exactly what you want inspected. "Request Description" is used to indicate what is to be inspected. Examples would be "*ceiling cover*", "*service*", "*re-inspect corrections*", "*circuits*", etc. "*Comment*" would be used for clarification or helpful information such as "*5th floor, south end*", "*dining/kitchen area only*", "*lockbox number 5422*", "*key on meter base*", etc. If an inspector has to waste two hours in a facility trying to find someone that knows where the electrical work that needs inspection is located, then every customer who needs inspection that day suffers. If you choose to enter specific needs such as "*call owner first at 555-5555*" or "*afternoon inspection preferred*", we may not be able to accommodate such a request and/or someone may not answer that phone. We still have to make an attempt to do the inspection within the required time and, with the daily workload from other customers, will not be able to keep calling or trying to gain access.

If you need to make special arrangements for an inspection, do not rely on faxes, E-mail, voice mail, or entries in the "Comments" or "Request Description" fields. You must talk directly with the inspector on the phone or in person to make such special arrangements.

Electrical Question of the Month

This Month's Question: The required grounding conductor for metal television satellite dish receiving antennas and metal structures supporting them must be connected to the grounding electrode system of the building or structure served with a conductor not smaller than **A)** 12 AWG copper, **B)** 10 AWG copper, **C)** 8 AWG copper, **D)** 6 AWG copper.

Last Month's Question: No parts of a pendant, lighting track, ceiling suspended paddle fan, or hanging type fixture can be located within a zone of how many feet horizontally and vertically from the top of a bathtub rim? **A)** 1', 6', **B)** 1 ½', 7', **C)** 2', 7 ½', **D)** 3', 8'. The answer is: **D)** [NEC 410.004(D)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 7 No. 8** **August 2004**

Electrical Inspectors Recognized for Special Work

Tukwila L&I Electrical Inspectors (from the left: Jack Oxford – supervisor, Steve Leighton and Chris Fontana – inspectors) were recognized by Chief Electrical Inspector, Ron Fuller on July 16th for their extraordinary work. He gave personal thanks and acknowledgment for their efforts in special oversight inspections. The inspections were politically sensitive and technically challenging on a complex electrical system in the late stages of construction.

The time spent away from their inspection areas placed additional stress on the performance of their regular inspection duties. Oxford, Leighton, and Fontana showed that they are "Team Players" willing to make personal sacrifices for the good of the entire electrical inspection program. They demonstrated a high degree of technical competency and represented the department in an exemplary professional manner. The Electrical Program is fortunate to have them as a part of the electrical inspection team.

Anti-fraud effort underway by Paul Trause, Director

We often hear the Department of Labor and Industries (L&I) doesn't do enough to combat fraud and abuse in the workers' compensation insurance system, particularly in regard to unregistered contractors who don't pay premiums.

L&I has stepped up its anti-fraud efforts, and recently the Legislature gave us powerful new tools to go after workers, providers and employers who cheat the system.

A big challenge is businesses that owe L&I insurance premiums and then close their doors to avoid payment, reopening under a slightly different name or a new owner. With the new "Successorship Liability" provision, the debt can now transfer to the new owner along with such things as leased equipment and company phone numbers. We also can now hold officers of a company, LLC or partnership personally liable for unpaid premiums when the business terminates or is abandoned.

The "Prime Contractor Liability," provision in the law gives general contractors a way to protect themselves from having to pay the L&I premiums for the subcontractors they hire. Contractors still must make sure subcontractors meet the four criteria for being a separate and independent business. If the subcontractor meets those criteria, all the general contractor has to do is check once a year on the status of that subcontractor's account with L&I. Contractors can do that on-line, or by phone.

Washington's workers' compensation system is one of the best in the country, providing employers with affordable coverage and workers with the benefits they need to recover from a job-related injury or illness. Making sure that claims are legitimate, and that all employers accurately report hours worked and pay the premiums they owe, are essential to maintaining the system's integrity.

Happy Birthday to Our Most "Senior" Active Electrician!!

Journeyman Howard A. Sloan from Woodinville, WA was born in June 1920. He earns the Washington state distinction as the most golden of the golden agers of the 22,000 active certified electricians. We wanted to interview Mr. Sloan to learn his secret for a long productive life, but his wife told us he is out of state for the next several months working full-time for an electrical contractor.

Emergency Rules – WAC 296-46B, Electrical Safety Standards, Administration, and Installation

The department recently implemented an emergency rule. After meeting with stakeholders and the Electrical Board, the following changes were made to Chapter 296-46B WAC. The emergency rule was effective August 2, 2004.

The department will move to permanently incorporate these changes into rule. A CR 101 has been filed and public hearings will be held in Tumwater and Moses Lake at a date and time to be announced.

WAC 296-46B-900 (8) As required by chapter 19.28 RCW or this chapter, an electrical work permit is required for the installation, alteration, or maintenance of all electrical systems or equipment except for:

(a) Travel trailers;

(b) Class A basic electrical work which includes the **like-in-kind replacement** of a: Contactor, relay, timer, starter, circuit board, or similar control component; household appliance; circuit breaker; fuse; residential luminaire; lamp; snap switch; dimmer; receptacle outlet; thermostat; heating element; luminaire ballast with an exact same ballast; component(s) of electric signs, outline lighting, skeleton neon tubing when replaced on-site by an appropriate electrical contractor and when the sign, outline lighting or skeleton neon tubing electrical system is not modified; ten horsepower or smaller motor; and induction detection loops described in WAC 296-46B-300(2) and used to control gate access devices.

WAC 296-46B-970(5) Instructor approval process:

(a) Instructor approval will be valid for three *years except:*

(i) If the instructor's credentials are invalidated (e.g., suspension or revocation by the issuing entity) for any reason, approval will be automatically revoked.

(ii) When the instructor approval expires or is revoked, a new application must be submitted to regain approved instructor status.

(b) Minimum requirements:

(i) The application must show that the instructor meets one of the following:

(A) Has a valid Washington:

- *~~General administrator's~~Administrator, master electrician, or electrician's certificate; and~~or~~*
- *~~General master electrician's certificate; and~~*
- *Has appropriate knowledge of and experience working as an electrical/electronic trainer; or*

(B) Is accredited by the Washington work force training and education coordinating board. The instructor's normal duties must include providing electrical/electronic education; or

(C) Is a high school vocational teacher, community college, college, or university instructor. The instructor's normal duties must include providing electrical/electronic education; or

(D) Works for and is approved by a manufacturer of electrical products to teach electrical continuing education.~~; or(E) For first aid classes is certified by the Red Cross or other similar agency as a first aid instructor;~~ and

(ii) Any other information the applicant wants to be considered during the review..

● Electrical Question of the Month

This Month's Question: No parts of a pendant, lighting track, ceiling suspended paddle fan, or hanging type fixture can be located within a zone of how many feet horizontally and vertically from the top of a bathtub rim? **A)** 1', 6', **B)** 1 ½', 7', **C)** 2', 7 ½', **D)** 3', 8'.

Last Month's Question: What is the mandatory marking required for all device and junction boxes (6 x 6 and smaller) in systems defined in the NEC as emergency systems? A) Permanently marked so they will be readily identified as a component of an emergency circuit or system, B) With an identification plate substantially yellow in color with letters, minimum ½" high, stating EMERGENCY SYSTEM, C) Painted inside and out substantially orange in color, D) Painted inside and out substantially red in color. The answer is: **C)** [WAC 296-46B-700(4)]

● Quarterly Compliance Report

This report lists the final judgments for: no electrical contractor's license, hiring uncertified electricians, no electrician certification, and failure to obtain necessary electrical work permits. The report is also posted on the Electrical Program website. The following firms and persons received a final judgment during the 2nd quarter of 2004. A final judgment means that all rights of appeal have been exhausted and a penalty is due or has been paid.

Final Judgments of Electrical Laws

This document is available in alternative formats to accommodate persons with disabilities. For assistance, call 1-800-547-8367. (TDD/TTY users, please call 360-902-5797.) Labor and Industries is an Equal Opportunity employer.

for the 2nd Quarter of 2004

Violator	*# of Citations*	*Penalty*
Violation - No Electrical Contractor 's License		
Region 1 - NW Washington		
WHITE, BRYCE L, PO BOX 250, STARTUP, WA	1	$500
SEA CON LLC, 165 NE JUNIPER ST STE 100, ISSAQUAH, WA	1	$500
AFFORDABLE HEATING & COOLING, 5415 HAPPY HOLLOW RD, STANWOOD, WA	1	$500
COMMERCIAL SECURITY SYSTEMS, PO BOX 933, MOUNT VERNON, WA	1	$500
KIRK, DOUGLAS, 216 N JOHNSON ST, KENNEWICK, WA	1	$500
WILSON MANAGEMENT INC, 1215 120TH AVE NE STE 103, BELLEVUE, WA	1	$500
RAE CONSTRUCTION, 2031 HIGHLAND AVE, EVERETT, WA	1	$500
VIACOMM INC, PO BOX 651, MOUNTLAKE TERRAC, WA	1	$500
AUTOMATIC DOOR & GATE CO, 621 SR 9 NE PMB A19, LAKE STEVENS, WA	1	$500
TRUJILLO, JOE, 15032 NE 167TH ST, WOODINVILLE, WA	1	$500
MAY, JAMES S, 3030 BARKLEY MEADOWS CIRCLE, BELLINGHAM, WA	1	$500
HAMILTON, CARY L, PO BOX 736, GOLD BAR, WA	1	$500
ELECTRICAL TECHNOLOGY, PO BOX 12627, MILL CREEK, WA	1	$500
PLUMBFAST CORPORATION, 8020 180TH ST SE, SNOHOMISH, WA	1	$500
HS & S INC, 2185 RONALD STREET, SANTA CLARA, CA	2	$1,000
NORTHWEST METROLOGY, 519 S. ELMGROVE, SEATTLE, WA	1	$500
AAA PUMP & WELL DRILLING, P O BOX 296, MONROE, WA	1	$500
COMPANY DE ROTH, 2104 HUMMINGBIRD LN, EDMOND, OK	1	$500
JAMES W FOWLER CO, PO BOX 489, DALLAS, OR	1	$500
JEFF'S LAWN CARE, 4205 W ARGENT, PASCO, WA	1	$500
THYSSENKRUPP ELEVATOR CORP, PO BOX 600002, MARIETTA, GA	1	$500
CORN, KIM, 2621-171ST AVE SE, BELLEVUE, WA	1	$500
Region 2 - King County		
DIGITAL MUSIC SYSTEMS INC, 21009 108TH AVE SE, KENT, WA	1	$1,500
BIZZELL, STEVEN W, 33226 - 37TH AVE SW, FEDERAL WAY, WA	1	$500
KARTOS, DALE, PO BOX 428, SEAHURST, WA	1	$500
SADRE NASSIRI, AMIR REZA, 3970 N LAKE SAMMAMISH PKWY, REDMOND, WA	1	$500
D & D CONSTRUCTION, PO BOX 1130, ENUMCLAW, WA	1	$500
SEA AIRE SHEET METAL INC, 2014 136TH AVE E, SUMNER, WA	1	$500
POMEROY IT SOLUTIONS, 8902 VINCENNES CIRCLE, INIANAPOLIS, IN	1	$500
EYE ON SECURITY, 18100 NE 95TH ST #2082, REDMOND, WA	1	$500
SAXTON BRADLEY INC, 5701 6TH OWE SO. SUITE 466, SEATTLE, WA	1	$500
GEORGIU, ALEXANDRU, 3603 SW 328TH PL, FEDERAL WAY, WA	1	$500
PACIFIC NW THEATRE ASSOC.INC., 615 S. ALASKA ST., SEATTLE, WA	1	$500
NORTHWEST CLIMATE CONTROLS INC, 101 23RD STREET STE B2, PUYALLUP, WA	1	$1,500
PUTZKE, MARK, 10226 NE 110ST, KIRKLAND, WA	1	$500
Region 3 – Pierce County, Kitsap & Olympic Penensulas		
KEITHLEY, LAYNE R, 30655 HANSVILLE RD B16, KINGSTON, WA	1	$500
MICHAEL PIERCE CONST, PO BOX 584, ORTING, WA	1	$500
HARBOR BUILDERS, 5202 CROMWELL DR NW, GIG HARBOR, WA	1	$500
WHITED, RONALD DALE JR, 1859 EVERGREEN PT RD, MEDINA, WA	1	$500
MARKEY, GERALD, 1933 WALNUT AVE SW, SEATTLE, WA	1	$500
STEVE COOK CONSTRUCTION, 3 GULL DR, PORT LUDLOW, WA	1	$500
T-N-T MECHANICAL, 22833 BOTHELL EVERETT HWY, BOTHELL, WA	1	$500
B & D CONSTRUCTION, PO BOX 1466, PORT TOWNSEND, WA	1	$500
COURTS, LON RUSSELL, 9906 19TH AVE E, TACOMA, WA	1	$500
LASZEWSKI, JEFF T, 3553 120TH AVE SE, BELLEVUE, WA	1	$500
RED'S ELECTRIC, 2300 6TH ST, BREMERTON, WA	1	$500
TURNBOUGH, LAWRENCE MICHAEL, 8508 LEONA WAY SW, LAKEWOOD, WA	1	$500
SAKAMOTO, COLLIN A, 2483 S EDMUNDS ST, SEATTLE, WA	1	$500
MARTIN, MATT, 13813 26TH AVE CT NW, GIG HARBOR, WA	1	$500
FINKEL, ANDREW, 7404 CASCADE DR, EVERETT, WA	1	$500
INTOUCH SOLUTIONS, 1508 O ST SW STE 101, AUBURN, WA	1	$500
MOORE, STEPHEN, PO BOX 4173, SEQUIM, WA	1	$500
CHINOOK REFRIGERATION INC, PO BOX 98377, LAKEWOOD, WA	1	$500
Region 4 - SW Washington		
DONEY, MATTHEW A, 1450 7TH E, HAMMOND, OR	5	$2,500
COOL CATS RFRG & REST REPAIR, PO BOX 389, YACOLT, WA	1	$500
MCNEIL, DAN, 571 BAYVIEW DR, SHELTON, WA	1	$500
BRIDGETOWN ELECTRIC, 22732 NW GILLIHAN RD, PORTLAND, OR	1	$500
STERBICK, RAYMOND, 983 BENITO CT, PACIFIC GROVE, CA	1	$500
POIRIER, TAD B, 725 37TH ST SE #25, AUBURN, WA	1	$500
FILLO, DAVID, PO BOX 12355, OLYMPIA, WA	1	$500
MCCAIN, DAN, 449 KIRKLAND RD, CHEHALIS, WA	1	$500

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DOTY, DANIEL M, PO BOX 14298, TUMWATER, WA	1	$500
AUTOMATEDLOGIC CORP, 1800 SANDY PLAINS PKWY STE 216, MARIETTA, GA	1	$500
Region 5 - Central Washington		
COLUMBIA CENTRAL VACUUM SYS, 90 NORTH KANSAS, EAST WENATCHEE, WA	1	$500
SANDERS, MIKE, 1515 JONES RD, RICHLAND, WA	1	$500
KELLOUGH, D S, 117 ROESLER RD, GLEN BURNIE, MD	1	$500
GALVEZ, FLORENTINO, 3921 LEOLA, PASCO, WA	1	$500
COMFORT NOW! HEATING & A/C, 1030 E SPRUCE ST, OTHELLO, WA	1	$500
JENKINS EXCAVATING, 9703 WEST COURT ST, PASCO, WA	1	$500
OPAQUE INNOVATIONS, P.O. BOX 19414, SPOKANE, WA	1	$500
WESTERN FEED SUPPLMNTS N W INC, 312 WENAS ST, ELLENSBURG, WA	1	$500
DIBENEDETTO, STEVEN A, 212 S. 86TH PL., YAKIMA, WA	1	$500
THERMALL HEATING & COOLING, PO BOX 1000, ELLENSBURG, WA	1	$500
ENERGY MNGMNT CONSULANTS LLC, 1550 LAFOLLIETTE ST, FENNIMORE, WI	1	$500
Region 6 - Eastern Washington		
HEANEY, ED, 724 W SPRUCE ST, NEWPORT, WA	1	$500
GUSTAFSON, STEVEN W, 4010 S GRAND AVE, SPOKANE, WA	1	$500
CHILCO HEATING & CO, PO BOX 871, RATHDRUM, ID	1	$500
MASTRONARDE, BOB, 3527 N AUDUDON, SPOKANE, WA	1	$500
LARRY BROWN EXCAVATION, PO BOX 461, CHATTAROY, WA	1	$500
SEHER, GARY, 1321 AMERICAN DRIVE, POST FALLS, ID	1	$500
HOLEHAN, MICHAEL P, 3949 EAST MAPLEWOOD AVE, POST FALLS, ID	1	$500
RIZZI, CHRISTOPHER J, 12817 N CRAIG RD, NINE MILE FALLS, WA	1	$500
FIRST STEP INTERNET LLC, PO BOX 9587, MOSCOW, ID	1	$500
BRITT, GARY, 34309 N REGAL LN, DEER PARK, WA	1	$500
ASBURY, ERNEST E, 403 E 14TH AVE, POST FALLS, ID	1	$500
KAIROS CONSTRUCTION LLC, PO BOX 19026, SPOKANE, WA	1	$500
Central Office		
DEWAARD & BODE INC, 1815 CORNWALL AVE, BELLINGHAM, WA	3	$1,500
A H C INC, PO BOX 1328, KENT, WA	38	$19,000
TELSERVICE NORTHWEST LLC, 31021 172ND AVE SE, AUBURN, WA	1	$500
LEGACY HOMES N W INC, 1816 S LAKE STEVENS RD #200, LAKE STEVENS, WA	1	$500
STROMME CONSTRUCTION LLC, 9623 8TH AVE NE, SEATTLE, WA	1	$500
MILLS MUSIC, 10120 MAIN ST., BOTHELL, WA	1	$500
SZEMILLER, MICHAEL, 10310 MIDVALE AVE N, SEATTLE, WA	1	$500
MARTENS, JERRY JR, 2000 105TH PL SE, EVERETT, WA	1	$500
TIM'S COMFORT PLUS, 6507 E MALLON, SPOKANE, WA	1	$500
RAMSEY CONSTRUCTION CORP, 9709 3RD AVE NE STE 550, SEATTLE, WA	1	$500
Violation - Hiring Uncertified Electrician		
Region 3 - Kitsap & Olympic Penensulas		
PHILLIPS & SON ELECTRIC INC, PO BOX 813, FALL CITY, WA	1	$500
Central Office		
SOUTHGATE ELECTRIC INC, 18940 DES MOINES WAY S #5, SEATTLE, WA	2	$200
4 J ELECTRIC INC, 3333 5TH ST, LEWISTON, ID	1	$100
4 J ELECTRIC INC, 3333 5TH ST, LEWISTON, ID	1	$100
AGAPE ELECTRIC INC, 13003 200TH ST SE, SNOHOMISH, WA	8	$800
A H C INC, PO BOX 1328, KENT, WA	24	$2,400
BEL-RED ELECTRIC SERVICE INC, PO BOX 3421, REDMOND, WA	5	$1,750
S M E INC OF SEATTLE, 828 POPLAR PLACE S, SEATTLE, WA	3	$300
C & B ELECTRIC, 2828 W IRVING, PASCO, WA	1	$500
TRANSTECH ELECTRIC INC, 23639 126TH AVE SE, KENT, WA	3	$300
SUNSET AIR INC, 5210 LACEY BLVD SE, LACEY, WA	3	$300
SOUND ELECTRIC, 7351 SPORTSMAN CLUB RD NE, BAINBRIDGE ISLAN, WA	1	$100
L & D ELECTRIC, 14811 16TH AVE CT S, SPANAWAY, WA	1	$500
IECS INC, 899 W MAIN ST, AUBURN, WA	1	$500
A H C INC, PO BOX 1328, KENT, WA	1	$100
Violation - Uncertified Electrician		
Region 1 - NW Washington		
COIE, BRENT, 813 S GREEN, KENNEWICK, WA	1	$250
KIRK, DOUGLAS, 216 N JOHNSON ST, KENNEWICK, WA	1	$250
MILLER, LARRY A, 31626 367TH AVE NE, ARLINGTON, WA	1	$250
LACHAPELLE, PAUL M, 4857 SEAFAIR DR, BLAINE, WA	1	$250
SCHOESSLER, VICTOR, PO BOX 651, MOUNTLAKE TERRAC, WA	1	$250
TRUJILLO, JOE, 15032 NE 167TH ST, WOODINVILLE, WA	1	$250
MAY, JAMES S, 3030 BARKLEY MEADOWS CIRCLE, BELLINGHAM, WA	1	$250
HAMILTON, CARY L, PO BOX 736, GOLD BAR, WA	1	$250
HERMAN, MIKE, PO BOX 296, MONROE, WA	1	$250
ROTH, KEN, 2104 HUMMINGBIRD LN, EDMOND, OK	1	$250
DURUZ, JAMES D, PO BOX 1748, ISSAQUAH, WA	2	$500

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Region 2 - King County		
LEBLANC, JOSEPH DONALD, 6119 189TH AVE CT E, SUMNER, WA	1	$250
DAVIDSON, RICHARD, 8421 THUJA AVE, YELM, WA	1	$250
GARLAND, RAYMOND WESLEY, 6522 K ST SOUTH, TACOMA, WA	1	$250
SCHOCCRAFT, ROBERT, 3016 PORTER ST, ENUMCLAW, WA	1	$250
HODGE, BRANDON C, 16757 32ND NE, SEATTLE, WA	1	$250
JOHNSON, LARRY W, 21303 48 AVE #A110, MUKILTEO, WA	1	$250
PUTZKE, MARK, 10226 NE 110ST, KIRKLAND, WA	1	$250
Region 3 – Pierce County, Kitsap & Olympic Penensulas		
BOWEN, PAT, 3005 S 11TH ST, TACOMA, WA	1	$250
ZIGLER, DAVID, 12404 142ND AVE E, PUYALLUP, WA	1	$250
REYNOLDS, KYLE, 11812 N CREEK PKWY 104, BOTHELL, WA	1	$250
COOK, STEVEN, 3 GULL DR, PORT LUDLOW, WA	1	$250
FITZPATRICK, LEE, PO BOX 1466, PORT TOWNSEND, WA	1	$250
COURTS, LON RUSSELL, 9906 19TH AVE E, TACOMA, WA	1	$500
TURNBOUGH, LAWRENCE MICHAEL, 8508 LEONA WAY SW, LAKEWOOD, WA	1	$250
NELSON, LON, 4613 N 13TH, TACOMA, WA	1	$250
BOWERS, JOHN F, 14443 MILITARY RD S, SEATAC, WA	1	$250
PADILLA, PHILLIP JOHN, 2342 JEFF AVE SE, PORT ORCHARD, WA	1	$250
PHILLIPS & SON ELECTRIC INC, PO BOX 813, FALL CITY, WA	1	$500
Region 4 - SW Washington		
SPOLNICK, EDWARD D, 15821 81ST AVE E, PUYALLUP, WA	1	$250
NUTTLE, GEORGE T, 16104 NE 31ST AVE, RIDGEFIELD, WA	1	$250
BIRKETT, STEVE, 5629 203TH ST SW, LYNNWOOD, WA	1	$250
JONES, KRISTOPHER C, 536 NW 10 AVE, CAMAS, WA	1	$250
NIEMI, RICHARD, 713 NE 3RD AVE, BATTLE GROUND, WA	1	$250
STEENSLID, KEITH KNUD, 22732 NW GILLIHAN RD, PORTLAND, OR	1	$250
KING, PHIL W, 214 WOODLAND VIEW RD, WOODLAND, WA	1	$250
STERBICK, RAYMOND, 983 BENITO CT, PACIFIC GROVE, CA	1	$250
GARNER, SCOTT W, 1434 E 2ND CT, MCMINNVILLE, OR	1	$250
BANKE, CHRISTOPHER J, 212 SW 10TH AVE, CANBY, OR	1	$250
COHARA, JOSEPH W, 1550 EUGENE CT, KEIZER, OR	1	$250
POIRIER, TAD B, 725 37TH ST SE #25, AUBURN, WA	1	$250
MCCAIN, DAN, 449 KIRKLAND RD, CHEHALIS, WA	1	$250
DOEHNE, STEVE J, 1411 S 3RD, KELSO, WA	1	$250
DOEHNE, CHRISTOPHER L, 1103 MT PLEASANT RD, KELSO, WA	1	$250
DIETERS, JAY, PO BOX 9006, YAKIMA, WA	1	$250
SCHULZ, JEFFREY D, 102 SE 44TH AVE, PORTLAND, OR	1	$250
Region 5 - Central Washington		
JENKINS, EUGENE, 9703 WEST COURT ST, PASCO, WA	1	$250
BROWN, NICK, 11216 EAST 35TH AVENUE, SPOKANE, WA	1	$250
SOURCE REFRIGERATION & HVAC, 800 E ORANGETHORPE AVE, ANAHEIM, CA	1	$250
EVANS, D BILL, 9775 B STONE RD, MOSES LAKE, WA	1	$250
DIBENEDETTO, STEVEN A, 212 S. 86TH PL., YAKIMA, WA	1	$250
Region 6 - Eastern Washington		
BRITTON, JOHN, 33909 AZTEC LANE, CHENEY, WA	1	$100
GUSTAFSON, STEVEN W, 4010 S GRAND AVE, SPOKANE, WA	1	$250
WAMBOLD, MICHAEL DAVID, 3114 W 5TH, SPOKANE, WA	1	$250
PETERSON, DANIEL R, PO BOX 871, RATHDRUM, ID	1	$250
MASTRONARDE, BOB, 3527 N AUDUBON, SPOKANE, WA	1	$250
BROWN, LAWRENCE W, PO BOX 461, CHATTAROY, WA	1	$250
SEHER, GARY, 1321 AMERICAN DRIVE, POST FALLS, ID	1	$250
YOUNGS, DAN, 4204 ATLANTIC, SPOKANE, WA	1	$250
RICKEY, PAT M, N 37220 LAKE SIDE DR, ELK, WA	1	$250
BRITT, GARY, 34309 N REGAL LN, DEER PARK, WA	1	$100
FISHER, DANIEL K, 6107 N BELT, SPOKANE, WA	1	$250
ROTHROCK, TODD, PO BOX 19206, SPOKANE, WA	1	$250
KRAHN, MARK A, 1314 E GARLAND, SPOKANE, WA	1	$250
Central Office		
MARSHALL, TRAVIS, PO BOX 1608, LEWISTON, ID	1	$100
CORONADO, GABE, 8327 1ST PL SE, EVERETT, WA	3	$300
ATON, KELLY ROSS, PO BOX 700, ROCHESTER, WA	1	$100
MCINTYRE, WAYNE K, 13915 8TH AVE SW, SEATTLE, WA	1	$100
SHAFER, DAVID A, 14005 42ND S #59, SEATTLE, WA	1	$100
HUTTON, MICHAEL, 504 W MONTGOMERY, MOUNT VERNON, WA	1	$250
MARSHALL, TRAVIS, PO BOX 1608, LEWISTON, ID	1	$100
LONG, JEREMIAH B, 26331 191ST PL SE, COVINGTON, WA	2	$500
HARRINGTON, ERIC C, 7001 OLD REDMOND RD H332, REDMOND, WA	5	$500
CERUSI, AUSTIN, 20216 46TH AVE NE, ARLINGTON, WA	1	$100

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ORME, STANLEY E, PO BOX 7210, KENT, WA	1	$250
ROMERO, ROY E, 206 ATKINS, RICHLAND, WA	1	$500
LEMUS, JOSE M, 1760 S. METHOW ST, WENATCHEE, WA	1	$250
SCHRAMM, SCOTT A, 24932 234TH PL SE, MAPLE VALLEY, WA	6	$600
MCGRAW, R REED, 722 WOODLAND AVE, CENTRALIA, WA	1	$250
DANIELS, GERALD, 31021 172ND AVE. SE, AUBURN, WA	1	$250
VISHNIAKOV, EUGENY, 808 191ST PL SW, LYNNWOOD, WA	1	$250
STROMME, PAUL, 9623 8TH AVE NE, SEATTLE, WA	1	$250
BERGNER, HANS W, 72 BUCKEYE LN, BREMERTON, WA	1	$100
DOLORES, ALEJANDRO B, 29225 MILITARY RD S APT K01, FEDERAL WAY, WA	1	$250
CREAMEANS, KEITH A., 19212 VISTA DR, ARLINGTON, WA	1	$250
JOHNSON, TEAL RAY, 5134 238TH ST E, GRAHAM, WA	1	$250
SZEMILLER, MICHAEL, 10310 MIDVALE AVE N, SEATTLE, WA	1	$250
CARLSON, DARWIN RANDALL, 1921 106TH ST SW, EVERETT, WA	1	$250
JONES, RYAN L, 215 100TH ST SW APT B-204, EVERETT, WA	5	$1,250
SOFIE, JUSTIN R, 232 121ST PL SE, EVERETT, WA	3	$750
WALKER, DONALD JASON, 4602 45TH AVE NE APT 296, TACOMA, WA	1	$250

Violation - No Electrical Permit

Region 1 - NW Washington

IDEAL SERVICES INC, 3525 SOUTH ALDER, TACOMA, WA	1	$600
EFFICIENT HEATING & COOLING, 219001 E PERKINS, KENNEWICK, WA	2	$500
MITCHELL, ROBERT, 301 N 5TH ST, TACOMA, WA	1	$250
AL'S QUALITY ELECTRIC INC, 2415 40TH ST SE, EVERETT, WA	1	$250
MOON SECURITY INC., PO DRAWER B, PASCO, WA	1	$250
REOH, TY C, 12517 44TH ST NE, LAKE STEVENS, WA	1	$250
CHRISTIANSON, JAMES H, PO BOX 103585, ANCHORAGE, AK	1	$50
CANNON ELECTRIC & REPAIR LLC, PO BOX 893, BELLINGHAM, WA	1	$250
VAST ELECT TECHNOLOGIES INC, 18080 NE 68TH ST STE A100, REDMOND, WA	3	$750
HILL, TONY, 910 103RD DR SE, LAKE STEVENS, WA	1	$250
SERENE LAKE ELECTRIC INC, 301 WOOD ST, SNOHOMISH, WA	1	$250
MIKLETHUN ELECTRIC INC, PO BOX 1519, SHELTON, WA	1	$250
CASCADE CHRISTIAN SERVICE, 131 W. KING TUT RD, LYNDEN, WA	1	$250
L & L ELECTRIC INC, 4601 CHENNAULT BEACH RD, MUKILTEO, WA	1	$250
AUTOMATIC DOOR & GATE CO, 621 SR 9 NE PMB A19, LAKE STEVENS, WA	1	$250
HOOD CANAL HEATING COOLING INC, 18361 E HWY 106, BELFAIR, WA	1	$1,000
EYE ELECTRIC, 1021 MASON ST., BELLINGHAM, WA	1	$250
BEST BUILT INC, PO BOX 70171, BELLEVUE, WA	1	$250
JEWELL ELECTRIC, PO BOX 70881, SEATTLE, WA	1	$250
JUDY, MARK, 12925 79TH DR SE, SNOHOMISH, WA	1	$50
GRIFFIN, BOYD E, 519 101 ST AVE NE, LAKE STEVENS, WA	1	$50
G & S HEATING CO INC, 500 E MAIN ST, MONROE, WA	1	$250
ALL AMERICAN HEATING INC, 8020 180TH ST SE, SNOHOMISH, WA	1	$250
HIATT, TOM, 13801 CHAIN LAKE ROAD, MONROE, WA	1	$50
BUSE, BEN, 19714 50TH ST SE, SNOHOMISH, WA	1	$50
BHEND, MARC, 11408 AIRPORT ROAD, EVERETT, WA	1	$50
PREMIER SOUND & COMM. INC, 218 MAIN ST (564), KIRKLAND, WA	1	$250
BOURLAND, DENNIS, 13501 KELLOG LK RD, SULTAN, WA	1	$50
HUTTON, MICHAEL, 504 W MONTGOMERY, MOUNT VERNON, WA	1	$50
TRIAD ELECTRICAL CONTRS INC, 2020 HUMBODLT ST, BELLINGHAM, WA	1	$250
AL'S QUALITY ELECTRIC INC, 2415 40TH ST SE, EVERETT, WA	1	$250
MORRISON CONSTRUCTION SRVC INC, 1990 SAINT ST, RICHLAND, WA	1	$250
HEATH NW INC, 727 S 96 ST, SEATTLE, WA	1	$1,000
VOS, TOM, PO BOX 1494, LANGLEY, WA	1	$50
UNITED ELECTRIC CONTRS INC, 5301 S 2ND AVE A, EVERETT, WA	1	$1,000
BLUE FLAME LLC, 13721 LAKE CITY WAY NE, SEATTLE, WA	1	$250
R & I ELECTRICAL CONTR INC, 16202 89TH AVE NW, STANWOOD, WA	1	$250
DAYCO INC, 11 N AUBURN ST, KENNEWICK, WA	1	$250
NEW TOMORROW'S ELECTRIC INC, A, 1723 LAKEWOOD ROAD, ARLINGTON, WA	1	$250
VIVA PROPERTIES INC., 3331 GREENBANK DRIVE, GREENBANK, WA	1	$250
TRAFFIC JAMS, 5623 W CLEARWATER AVE #A, KENNEWICK, WA	1	$250
TRIAD SERVICE ELECTRIC, 2020 HUMBOLDT, BELLINGHAM, WA	1	$250
MCMORROW, EDWARD, 1024 4TH AVE. S, EDMONDS, WA	1	$50
MARIN, RICHARD, 18918 80TH AVE. W, EDMONDS, WA	1	$50
ONG, TIMOTHY, 3443 227TH ST. SW, BRIER, WA	1	$50
FROULA ALARM SYSTEMS INC, 861 INDUSTRY DR, TUKWILA, WA	1	$250
SMOOTS, DAN, 602 MAPLE, SNOHOMISH, WA	1	$50
WALKER'S ELECTRIC, 5830 SCHERRER RD, GRANITE FALLS, WA	1	$250
M M COMFORT SYSTEMS INC, 18103 NE 68TH SUITE C200, REDMOND, WA	1	$250
LALONE, JEFF, 2712 NEWBERG RD, SNOHOMISH, WA	1	$250

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KORHONEN, CLINT, 4325 151ST ST NE, MARYSVILLE, WA	1	$50
ERIC'S ELECTRIC, 9311 188TH ST SE, SNOHOMISH, WA	1	$250
Region 2 - King County		
D S ELECTRIC CO, 25804 34TH AVE S, KENT, WA	1	$250
HANSON, GERYL L, 41407 196TH AVE SE, ENUMCLAW, WA	1	$250
BRINKS HOME SECURITY INC, 19115 WEST VALLEY HIWAY H106, KENT, WA	1	$250
ROBINSON ELECTRIC LLC, 6203 170TH PL SW, LYNNWOOD, WA	1	$250
HILLS BROTHERS ELECT CNTRS INC, 21849 SE 271ST PL, MAPLE VALLEY, WA	1	$250
POMERY IT SOLUTIONS, 8902 VINCENNES CIRCLE, INDIANAPOLIS, IN	1	$250
TOUCHTONE COMMUNICATIONS INC, PO BOX 1196, PORT ORCHARD, WA	1	$250
PILCHUCK DIVERSIFIED SERVICES, PO BOX 808, BOTHELL, WA	1	$250
STEELE CORP, 17024 68TH AVE W, EDMONDS, WA	1	$1,000
SASCO ELECTRIC, 18815 139TH AVE NORTH EAST, WOODINVILLE, WA	1	$250
A K ELECTRIC, 16757 32ND AVE N E, SEATTLE, WA	1	$250
ANSOLE, MAXIMO, 27006 MAPLE VALLEY HWY., MAPLE VALLEY, WA	1	$50
WALIA, MANMOHAN, 31509 3RD AVE., BLACK DIAMOND, WA	1	$50
NORTHWEST CLIMATE CONTROLS INC, 101 23RD STREET STE B2, PUYALLUP, WA	1	$250
Region 3 – Pierce County, Kitsap & Olympic Penensulas		
KNOBLAUCH, DONALD, 8820 RIVERSIDE RD E, SUMNER, WA	1	$250
LUCKY ELECTRIC, 2914 136TH ST CT E, TACOMA, WA	1	$250
DAY WIRELESS SYSTEMS, PO BOX 22270, MILWAUKIE, OR	1	$250
PACIFIC AIR CONTROL INC, 11812 NORTH CREEK PKWY N #104, BOTHELL, WA	1	$250
HIGH COUNTRY ELECT CONST INC, 3275 BIG BEAR DRIVE, SEDALIA, CO	1	$250
HANSON SIGN CO INC, PO BOX 928, SILVERDALE, WA	1	$250
CRAIGHEAD ELECTRIC INC, PO BOX 555, CHIMACUM, WA	1	$250
PENINSULA POLE SERVICE INC, PO BOX 13, BURLEY, WA	5	$500
NORTHWEST ELECTRICAL & SER INC, 10228 29TH ST E, EDGEWOOD, WA	1	$250
NAUVOO ENTERPRISES INC, 1316 WILLOW ST, SUMNER, WA	1	$250
E & F ELECTRIC INC, 25806 136TH AVE SE, KENT, WA	1	$250
KIRSCH ELECTRIC INC, PO BOX 3396, SEQUIM, WA	1	$1,000
MR ELECTRIC OF TACOMA, PMB 260 5303 PACIFIC HWY E, TACOMA, WA	1	$1,000
CHINOOK REFRIGERATION INC, PO BOX 98377, LAKEWOOD, WA	1	$250
AIR MASTERS INC, 3210 SE MILE HILL DR STE 101, PORT ORCHARD, WA	1	$250
PHILLIPS & SON ELECTRIC INC, PO BOX 813, FALL CITY, WA	1	$500
Region 4 - SW Washington		
T & L COMMUNICATIONS INC, 4817 COLUMBIA VIEW, VANCOUVER, WA	1	$1,000
D M S ELECTRIC INC, 8504 SE STARK ST, PORTLAND, OR	1	$250
HAGENSEN, STEVE, 1817 NE 267 AVE, CAMAS, WA	1	$250
TRITON'S ELECTRIC, 2711 NW SUNSET CT, CAMAS, WA	1	$250
COMTECH ELECTRIC, PO BOX 18840, SPOKANE, WA	1	$250
GARONAIRE INC, 2515 KAUFFMAN AVE, VANCOUVER, WA	1	$250
PHOENIX SIGN CO, PO BOX 497, ABERDEEN, WA	1	$250
CHANEY, SKYE L, PO BOX 820362, VANCOUVER, WA	1	$50
DIEBOLD INC, PO BOX 3077, N CANTON, OH	1	$250
BURKETT, JOHN, 406 HEMENWAY RD, WINLOCK, WA	1	$50
SAFECO ELECTRIC, 5225 SE 113TH, PORTLAND, OR	1	$250
AREA HEATING & COOLING INC, 2721 NE 65TH AVE, VANCOUVER, WA	1	$250
FOSS INDUSTRIES/FOSSCRAFT INC, 11648 BALD HILL RD SE, YELM, WA	1	$250
SUMMIT LOGISTICS INC, 22430 76TH AVE S, KENT, WA	1	$250
BLAIRCO INC, 7609 MACARTHUR BLVD, VANCOUVER, WA	1	$1,000
IDEAL SERVICES INC, 3525 SOUTH ALDER, TACOMA, WA	1	$250
MILL PLAIN ELECTRIC INC, 6115 NE 88TH ST, VANCOUVER, WA	1	$250
E S & A INC, 1210 OAKPATCH RD, EUGENE, OR	1	$1,000
Region 5 - Central Washington		
AHTANUM ELECTRIC INC, 2300 W WASHINGTON AVE STE #11, YAKIMA, WA	1	$250
NORTHSIDE ELECTRIC INC, PO BOX 417, AMBOY, WA	1	$250
EFFICIENT HEATING & COOLING, 219001 E PERKINS, KENNEWICK, WA	1	$250
MANSFIELD ALARM CO INC, 3106 W NOB HILL BLVD, YAKIMA, WA	1	$250
COMFORT MECHANICAL CONTRS INC, PO BOX 758, GREENACRES, WA	1	$250
STATE OF THE ART ELECTRONICS, 3902 W 42ND AVE, KENNEWICK, WA	1	$250
CHINOOK HEATING & AIR INC, 2610 S KENT, KENNEWICK, WA	1	$250
AMERICAN MEDIA LLC, 1900 W FOWLER F, RICHLAND, WA	1	$250
ARTISTIC CONCEPTS ELECTRIC, PO BOX 4242, WEST RICHLAND, WA	1	$250
APOLLO SHEET METAL INC, 1207 W COLUMBIA DR, KENNEWICK, WA	1	$250
ALLAN ELECTRIC INC, 918 A WEST CANAL DR, KENNEWICK, WA	1	$250
STANLEY ELECTRICAL LLC, PO BOX 6782, KENNEWICK, WA	1	$250
POLHAMUS HEATING & A/C INC, 3211 BELL RD NE, MOSES LAKE, WA	1	$250
ALL-PHASE REF & HTG INC, 818 W JOHN DAY AVE, KENNEWICK, WA	1	$250
TOTAL ENERGY MANAGEMENT INC, 1975 BUTLER LOOP RD, RICHLAND, WA	1	$250

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BARCLAY, LEW S, 100804 EAST REATA RD, KENNEWICK, WA	1	$50
IRRIGATION SPECIALISTS INC, PO BOX 2544, PASCO, WA	1	$250
FIRE PROTECTION SPEC LLC, 111 N VISTA RD STE 4E, SPOKANE, WA	1	$250
TED'S PLUMBING, 22100 NE 237TH AVE, BATTLE GROUND, WA	2	$500
WESTSIDE ELECTRIC, 1014 N 34TH AVE, YAKIMA, WA	1	$250
ESSCO OF TRI-CITIES INC, 1866 ALDER AVE, RICHLAND, WA	1	$250
DALE THOMAS COMM HVAC INC, 1825 LESLIE RD UNIT 216, RICHLAND, WA	1	$250
T & L ENTERPRISING LLC, 3855 E POLELINE RD, POST FALLS, ID	1	$250
APEX ELECTRIC, 2021 MAHAN AVE #I-1, RICHLAND, WA	1	$250
YAKIMA VALLEY COMM COLLEGE, PO BOX 22520, YAKIMA, WA	12	$3,000
CHEYENNE ELECTRIC INC, 7103 W CLEARWATER AVE #J, KENNEWICK, WA	1	$250
CAMERASCAN, PO BOX 980, NORTH BEND, WA	1	$250
CASTLE AIR INC, 1846 TERMINAL DR, RICHLAND, WA	1	$250
RAINBOW ELECTRIC INC, N 809 NAPA, SPOKANE, WA	1	$250
CAMERASCAN, PO BOX 980, NORTH BEND, WA	1	$250
JOSE'S HARDWARE, 408 WEST FIRST STREET, WAPATO, WA	1	$50
CENTRAL MECHANICAL SERVICES, PO BOX 86, YAKIMA, WA	1	$250
HOYDAR BUCK INC, PO BOX 146, SELAH, WA	1	$250
ALL-PHASE REF & HTG INC, 818 W JOHN DAY AVE, KENNEWICK, WA	1	$250
Region 6 - Eastern Washington		
POWERHOUSE ELECTRIC INC, 5209 W MILLBURY DR, SPOKANE, WA	1	$250
STURM HEATING INC, 1112 N NELSON, SPOKANE, WA	1	$1,000
A-1 SECURITY SYSTEMS, PO BOX 155, GREENACRES, WA	1	$250
CURRENT ELECTRICAL LLC, 761 RIVER HEIGHTS DRIVE, POST FALLS, ID	1	$250
DIETZ ELECTRIC LLC, E 4116 35TH AVE, SPOKANE, WA	1	$250
S M K CONSTRUCTION CO INC, PO BOX 4687, SPOKANE, WA	1	$250
TOWER ELECTRIC, 11401 E MONTGOMERY DR STE 2, SPOKANE, WA	1	$250
CHANE, IT-SHONG, 24506 E 3RD, LIBERTY LAKE, WA	1	$50
AIR CHOICE, PO BOX 333, COLBERT, WA	1	$250
NEWPORT ALARM, 962 STOHR RD, NEWPORT, WA	1	$250
K & K ELECTRIC INC, 3335 HWY 95, MOSCOW, ID	1	$250
CANTER ELECTRIC INC, N 7220 MARKET, SPOKANE, WA	1	$250
ALL AMERICAN ALLIANCE ELECTRIC, 2121 W BURROUGHS RD, DEER PARK, WA	1	$250
M & M HARRISON ELECTRIC CO, PO BOX 174, COLFAX, WA	1	$250
CAMTEK INC, 3323 E 57TH AVE, SPOKANE, WA	1	$250
FIRST STEP INTERNET LLC, PO BOX 9587, MOSCOW, ID	1	$250
PAT'S PUMPS, 37220 N LAKESIDE DR, ELK, WA	1	$500
KNIGHT CONST & SUPPLY INC, 28308 N CEDAR RD, DEER PARK, WA	1	$250
ASBURY, ERNEST E, 403 E 14TH AVE, POST FALLS, ID	1	$250
ANDERSON'S SHEET METAL HTG/AC, E 13903 TRENT, SPOKANE, WA	1	$250
DEER PARK HEAT & COOL LLC, PO BOX 1232, DEER PARK, WA	1	$250
KAIROS CONSTRUCTION LLC, PO BOX 19026, SPOKANE, WA	1	$250
Central Office		
A H C INC, PO BOX 1328, KENT, WA	37	$9,250
ACTION PLUS ELECTRIC INC, PO BOX 1423, MAPLE VALLEY, WA	1	$250
MILLS MUSIC, 10120 MAIN ST., BOTHELL, WA	1	$250
EVERGREEN SECURITY INC, 8229D 44TH AVE W, MUKILTEO, WA	1	$1,000
ASSOCIATED ELECTRIC COMPANY, PO BOX 280, SNOHOMISH, WA	1	$250
R & S ELECTRIC, PO BOX 1412, MARYSVILLE, WA	2	$500
KIRBY ELECTRIC INC, 4826 B ST NW STE 101, AUBURN, WA	1	$1,000
VIKING ELECTRIC SALES/SRVC INC, 20324 19TH AVE NE #A, SEATTLE, WA	1	$250
ELMECCO INC, 9632 ROOSEVELT WAY NE, SEATTLE, WA	1	$250
GRANITE ELECTRIC INC, BOX 2900, EVERETT, WA	1	$250
MAXIMUM ELECTRIC INC, 25031 265TH AVE SE, RAVENSDALE, WA	1	$1,000
ELECTRICAL INSTALLERS INC, 23425 49TH AVE SE, BOTHELL, WA	1	$250
GLOBAL SCTY & COMM OF WA INC, 3212 MAIN ST, VANCOUVER, WA	1	$250
NORTHWEST SECURITY & SOUND INC, 1320 HUNSICKER ST, BELLINGHAM, WA	1	$250
COBRA CLEANING & RESTORATION, 2924 HAXTON WAY, BELLINGHAM, WA	1	$250
JACK IN THE BOX INC, 1217 SOUTHWEST 7TH STREET, RENTON, WA	1	$250
HOFFMAN MUSIC CO INC, 1430 N MONROE, SPOKANE, WA	1	$250
MERIT ELECTRIC OF SPOKANE INC, N 815 HELENA, SPOKANE, WA	1	$1,000
SPECIALTY LIGHTING & ELECTRIC, PO BOX 3711, SPOKANE, WA	1	$250
ADVANCED ELEC & SECURITY INC, 10218 32ND ST E, PUYALLUP, WA	1	$1,000
BETSCHART ELECTRIC CO INC, PO BOX 88, OLYMPIA, WA	1	$250
CAMERASCAN, PO BOX 980, NORTH BEND, WA	1	$250
PYRAMID ELECTRIC, 23825 107TH PL W, EDMONDS, WA	1	$250

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 7 No. 8 SE** **August 2004**

SPECIAL EDITION

● The Department Is Seeking Stakeholder Input For Proposed Rule Changes

Any stakeholder in the electrical industry may make proposals for additions and/or revisions to the Washington Administrative Code WAC 296-46B – Electrical Safety Standards, Administration, and Installation electrical rules.

Rules are developed to aid both stakeholders and the department in clarification or enforcement of the intent of the electrical statute. New rules cannot be drafted simply because an individual feels that "it's a good idea." Technical changes require evidence of a specific problem and substantiation that the proposal will provide a solution for that problem.

● General Rule Revision Process

In the future, the electrical WAC is on an annual cycle to coincide with revisions needed due to legislative action. WAC development process rule revision cycles will be closely modeled towards the process used by the National Fire Protection Association (NFPA) in development of the National Electrical Code. The NFPA code development model has proven to be an efficient and effective model for many decades.

The department is responsible for developing all rules. The department will act as the correlating organization during the rule development process and may at any time promote rule change as necessary to accommodate statutory change or department policies or procedures.

● Proposals for Change

Your proposals to WAC 296-46B **must be made electronically** (e.g. compact disc, floppy disk, or as an email attachment sent to *electricalprogram@lni.wa.gov*) using the form supplied by the department.

The form shown in this edition must be used to submit rule proposals for the 2004 – 2005 revision cycle. An electronic fill-in version of the form is available on our website homepage:

www.lni.wa.gov/TradesLicensing/Electrical

Industry proposals **must be received between September 15, 2004 and October 15, 2004**. The submitter may submit a proposal(s) by:

- Sending the proposal(s) as an email attachment to *electricalprogram@lni.wa.gov*; or
- Mailing a compact or floppy disc containing the proposal(s) to Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460.

All proposals must clearly identify original language as "new text." Proposed revisions should include the relevant existing text and should use the legislative format (i.e. Use underscore (or underlining) to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~)).

Proposals that are not submitted according to these instructions will be rejected.

Technical Advisory Committee (TAC) – General

The department will appoint a TAC made up of experts and interest group representatives to review and make recommendation on proposals from the electrical industry. The department will use an open, fair, and transparent process to solicit and confirm TAC membership.

Persons interested in becoming TAC members must submit a letter of interest to the Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460 **to be received no later than September 10, 2004**. The letter should show constituency support for the prospective member.

Anyone wishing to be kept informed of the WAC process should join the Electrical Listserve at:

http://listserv.wa.gov/archives/electrical.html

There will not be a specific mailing list for this process. A special posting of the WAC process will also be made on the electrical program Internet website and through updates in the Electrical Currents newsletter.

TAC makeup will be based on an equitable distribution relative to proportion of involvement within the electrical industry in Washington. TAC membership provides an opportunity for licensed electrical contractors, certified electricians, electrical engineers, electrical manufacturers, city regulators, L&I electrical inspection staff, electrical trainer, electrical testing laboratories, electrical & telecommunications utilities, training schools, and consumers to participate in the WAC development process. A primary representative and an alternate may be identified for each available position.

All TAC meetings are open to the public.

TAC – Process

The TAC will make recommendations on industry proposals and identify proposals that may have an economic impact on small businesses, construction costs, or the cost of enforcement

The TAC must review and evaluate proposals based on the need:

- To address a critical life/safety need;
- To address a specific state policy/statute;
- To maintain a competitive environment;
- To address a unique character of the State; or
- To correct errors and omissions.

TAC representatives must have decision-making authority at committee meetings. Members who know they will be absent from a TAC meeting should make every effort to send their alternate.

TAC's will operate on a consensus agreement basis. "Consensus agreement" means a unanimous or near unanimous agreement by the TAC members on an issue. The TAC chairman will determine if consensus has been reached and whether the issue may be revisited. If the TAC chairman determines that a strong majority of TAC members are in agreement, but consensus cannot be reached, a majority and minority recommendation may be forwarded to the department and Electrical Board. TAC recommendations will be summarized for each proposal.

All TAC members share an equal vote.

TAC – Membership

- Chairperson– Chief Electrical Inspector
- 1 – Consumer
- 1 – Training School
- 1 – Continuing Education Provider
- 1 – Electrical Engineer
- 1 – Electrical Manufacturer
- 1 – Testing Laboratory
- 2 – L&I Electrical Inspection Staff
- 1 – City Regulator
- 1 – Electric Utility
- 1 – Telecommunications Utility
- 5 – General Electrical Contractors
- 5 – General Journeyman Electricians
- 3 – Specialty Electrical Contractors
- 3 – Specialty Electricians

2004-2005 WAC revision process – Proposed Sequence of Events

- **September 1, 2004** – File CR 101 – pre-proposal statement of inquiry
- **September 15, 2004** – Call for proposals to: amend or add to the existing WAC
- **October 1, 2004** – TAC membership published
- **October 15, 2004** – Close proposal period
- **October 22, 2004** – TAC members individually review proposals
- **October 28, 2004** – Electrical Board review
- **November 10, 2004** – TAC meets to act on proposals *****
- **November 11, 2004** – TAC meets to act on proposals *****
- **November 17, 2004** – Report on proposals is published for public review and comment
- **December 1, 2004** – Public comment on proposals closes
- **December 2, 2004** – Department review and final draft development
- **January 27, 2005** – Electrical Board review and recommendations
- **February, 2005** – Final department review
- **March, 2005** – File CR 102 – proposed rule filing (opens the official required public comment period)
- **Early April, 2005** – Public hearings
- **Late April 2005** – File CR 103 – rulemaking order (adoption)
- **June 2005** – Effective rule
- **June 2005** – Open proposal period for the next rule cycle

* Additional meetings may be scheduled if necessary. All TAC meetings are scheduled from 8 AM to 5 PM at the Evergreen Room, Comfort Inn, Tumwater Room, 1620 74th Ave., Tumwater, WA 98501.

PROPOSAL FORM for 2004 – 2005 WAC 296-46B Rule Changes

Rule/Section: _____ (X one): ☐New Text ☐Revised Text ☐Deleted Text

FOR L&I USE ONLY

Date Received:

Mail to: Chief Electrical Inspector
Department of Labor and Industries
Electrical Section
PO Box 44460
Olympia, WA 98504-4460

Email to: electricalprogram@lni.wa.gov

NOTES:

1. All proposals must be **received from September 15, 2004 through October 15, 2004**.
2. Limit each proposal to a single rule section. Use a separate copy for each proposal.
3. Include supplementary material (photographs, diagrams, reports, etc.) if necessary to support your proposal.

Date submitted: _____ **Name:** _____ **Telephone:** _____

Representing: _____

Mailing Address: _____

Email Address: _____

1. Proposal: *Include new or revised wording, or identification of wording to be deleted. Proposed text should be in legislative format. Use underscore to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~).*

2. Statement of Problem & Substantiation for Proposal: *Note: State the problem that will be resolved by your proposal and substantiation for your proposal.*

3. Check one: ☐This proposal is original material ☐This proposal is not original material

Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector Vol. 7 No. 7 July 2004

• LAST CHANCE!!! ALL OPEN WINDOW OPPORTUNITIES END JULY 31, 2004

The "open window" opportunity for certain contractors and administrators (WAC 296-46B-930) and specific specialty electricians (WAC 296-46B-950) will end July 31, 2004. For details, see the June 2004 edition of this newsletter at: www.lni.wa.gov/TradesLicensing/Electrical/WhatsNew.

● SAFES (Strategic Action For Electrical Safety) Team Is Active Statewide

The department's SAFES – Strategic Action For Electrical Safety team is doing compliance work in cities and towns around the state. In response to the concerns legitimate contractors have with the underground economy, these electrical compliance inspectors are focusing their efforts on finding unlicensed electrical contractors, uncertified electricians, and those who fail to obtain required electrical permits. The team has been very successful, issuing just over 300 citations in the targeted areas and over 60 referrals to other programs for violations of the general contracting, industrial insurance, and jobsite safety laws.

SAFES team members are working exclusively on compliance investigations and have no electrical inspection duties. Team supervisor, Jim Hinrichs, is willing to accept good referrals from contractors who are competing with firms and individuals operating out of compliance with the law. If you have verifiable information of unfair competition, illegal activities, or illegal work in progress you may contact Jim Hinrichs at (425) 290-1320. The team is based in the Everett L&I office, but is working across Washington. You will increase the chances of a successful investigation if you complete an *Electrical Inspection Witness Statement* (form F500-087-000) or *Investigation Report* (form F500-076-000) available on our Web site forms page at: http://www.lni.wa.gov/TradesLicensing/Electrical/FormPub

● Deadlines For Certification Renewals And Citation Appeals

Strict deadlines for certification renewals and citation appeals are written into the electrical laws. To avoid a late penalty fee or being required to take the exam again, certificate renewals must occur before the expiration date printed on the certificate. If you want to receive the department courtesy renewal notices as a contractor, administrator, electrician, or trainee, you must maintain a valid current address in our database. You can update this information with a *Request For Change Of Address* form available on the forms page at our Web site. Again, it is important to keep your address current in our database. The law requires the department to send penalty notices only to the "last address of record".

Renewals one to ninety days late must pay a penalty fee.

Renewals ninety-one days late will not be processed. The applicant must retake the exam to obtain a new certificate. Excuses for late renewals are not accepted.

Citation/suspension appeals have a very strict twenty-day appeal timeframe. The twenty days is counted from the issue date on the official department letter and does include weekends, holidays, mailing time, etc. The twenty days is not counted by business days, or from the day you receive the notice, or the postmark date if you mail your appeal letter. Appeals received by the department more than twenty days from the issue date of the notification letter will not be allowed and the penalty will then become final. The courts have consistently applied this method of calculating the twenty-day appeal window. The twenty-day appeal window starts the day the notice is issued whether you receive it or not. If we have an old address for your record, it is possible you may receive a penalty and have the appeal window close, long before your mail catches up with you. The penalty will still be final and due.

● WAC Changes. Class B Installation Labels—Random Inspection Of Specific Work

Generally, only licensed electrical contractors can use the Class B basic electrical inspection random inspection process. Health care, large commercial, or industrial facilities using an employee who is a certified electrician(s) will be allowed to use this process only after requesting permission and receiving approval from the Chief Electrical Inspector. The conditions of use, the installation procedures, and the details of the limited (Class B) electrical work eligible for this random inspection may be found in WAC 296-46B-110(6-10). The two-part labels will be sold only in books of twenty. The printing will be completed by July 15th and quickly distributed to the local offices for sale.

● WAC Changes. WAC 296-46B-210(3) 012 Arc-Fault Circuit-Interrupter Protection

For the purpose of clarifying NEC 210.12(B) in requiring AFCI protection in dwelling unit bedrooms, this revision states that spaces accessed only through a bedroom, ancillary to the bedroom's function, and containing 15- and 20-ampere, 125-volt receptacle outlets are part of the "bedroom" circuits that must have AFCI protection. These spaces will include closets, sitting areas, and similar areas, but do not include bathrooms.

● WAC Changes. WAC 296-46B-334 Use Of Nonmetallic Sheathed Cable

The changes expand the use of Type NM cable. The rules allow Type NM cable in all one or two-family dwellings and other structures of Types III, IV, and V construction except as prohibited in NEC 334.12. In structures of Types III, IV, and V construction, other than one, two or multifamily dwellings, all cable(s) must be concealed within walls, floors, or ceilings that provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies. The installer will be required to provide the inspector documentation substantiating the type of building construction and finish material rating(s) prior to any electrical inspection.

The building official will determine the International Building Code (IBC) type of construction classification for "other than one and two-family dwellings."

All electrical contractors and electricians should note that the WAC Technical Advisory Committee and the Electrical Board did not agree to a proposal to modify the (02) residential specialty electrician scope of work to allow (02) electricians to work in nonresidential occupancies. Although nonmetallic-sheathed cable may be used in buildings of up to five floors, the (02) is limited to one and two-family dwellings and multifamily dwellings not exceeding three floors above grade.

● WAC Changes. Continuing Education (CEU) Course And Instructor Approval

An Electrical Board decision (to delegate course and instructor approval to the department) and revisions of the electrical rules make significant procedural changes for CEU course sponsors and instructors. Now that the minimum requirements for course approval and instructor approval have been clearly defined in WAC 296-46B-970, separate applications and fees are required for courses and individual instructors. The approval for a course or instructor is valid for three years. Neither classes nor instructors will be renewed. At the end of the three-year period, course sponsors and individual instructors must submit a new application and demonstrate they continue to meet the minimum requirements.

Individuals that meet the instructor minimum qualifications by being employed and approved by a manufacturer of electrical products may only instruct classes sponsored by that manufacturer. Instructors properly approved under the other experience and technical qualifications in WAC 296-46B-970 may teach any approved course if a course sponsor finds them competent.

● Weatherproof Receptacle Covers On Construction Temporary Services

We have received comments from our customers, inspection supervisors, and electrical inspectors about the lack of durability of bubble-type weatherproof receptacle covers used on temporary service equipment at construction sites. The products manufactured today work well on fixed, permanent receptacles in residential, commercial, and industrial facilities, but do not hold up in the construction environment.

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When bubble covers are broken, the receptacles are completely unprotected from the elements and potentially create a more hazardous condition.

Effective immediately, we will modify the interpretation published in the June 2003 ELECTRICAL CURRENTS newsletter. 15- and 20-ampere, 125- and 250-volt receptacles installed for temporary service equipment at construction sites, outdoors, in a wet location will be permitted to comply with NEC 406.8(B)(2)(b) that states, "*A receptacle installed in a wet location where the product intended to be plugged into it will be attended while in use (e.g., portable tools, and so forth) shall have an enclosure that is weatherproof when the attachment plug is removed.*" All covers approved for a weatherproof location, whether or not the attachment plug is inserted or removed, will be acceptable.

● You Must Have Your Electrician Or Training Certificate With You While Working

The law is very clear on this issue. It is not an option. RCW 19.28.161 states, "*No person may engage in the electrical construction trade without having a valid master journeyman electrician certificate of competency, journeyman electrician certificate of competency, master specialty electrician certificate of competency, or specialty electrician certificate of competency issued by the department in accordance with this chapter...All apprentices and individuals learning the electrical construction trade shall obtain an electrical training certificate from the department...Apprentices and individuals learning the electrical construction trade shall have their electrical training certificates in their possession at all times that they are performing electrical work*." RCW 19.28.271 states, "*It is unlawful for any individual to engage in the electrical construction trade or to maintain or install any electrical equipment or conductors without having in his or her possession a certificate of competency or a training certificate under RCW 19.28.161 through 19.28.271*."

You must properly identify yourself as a certified electrician or trainee to customers, contractors, building officials, electrical inspectors, or compliance inspectors. You are subject to citation if you do not have your certificate in your possession while working on the jobsite.

● Six-Foot Ground Rods Are Intended Only For Exempt Telecommunications Use

Be aware of the length of the ground rod you are purchasing. With the department's emphasis on the proper installation of ground rods, ensure you are using the 8' ground rods required by the National Electrical Code (NEC). Our own inspectors and our city electrical inspection partners report that electrical supply houses in their jurisdiction have a plentiful stock of 6' ground rods for sale.

These less expensive electrodes are intended for telecommunications work on the exempt (upstream) side of the telecommunications demarcation point, and some electrical contractors are improperly using them to ground electrical systems. Installing a 6' ground rod in an installation under the electrical installations requirements has the same citation penalty and possible suspension as cutting off an 8' rod.

● Security Cameras—Are They Limited Energy Installations Or Not?

The department receives many licensing questions about the installation of security cameras. Fixed-in-place cameras powered by a <u>nearby</u> Class 2 plug-in transformer or by cord and plug directly from a 120-volt receptacle don't need to be installed by certified journeyman or limited energy electricians.

However, technology is changing and the industry trend is to use a remote power supply panel (usually located in a secure "surveillance room") to supply 24-volt circuits to surveillance equipment throughout a building. Power supply panels are listed and typically contain a Class 2 transformer, fuses rated 2 amps or less, and terminals for multiple 24 volt circuits.

It was never the intent of the telecommunications legislation to allow uncertified telecommunications workers to install limited energy power conductors (of any voltage level) throughout a building. A telecommunications worker may only supply telecommunication equipment from an adjacent limited energy power supply (e.g. a wireless alarm control panel or product identification radio transmitter).

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This exclusion includes hybrid cables containing limited energy and data conductors. All limited energy circuits must be installed by an (01)-general or (06)-limited energy electrical contractor using certified journeyman or limited energy electricians.

● Facts About Specialties, Trainees, And Required Supervision

With the new emphasis placed on licensing, certification, and permit compliance at the request of our legitimate contractors and electricians, and the startup of the Strategic Action For Electrical Safety (SAFES) team activities in April (see the February 2004 edition of this newsletter), we want to ensure that accurate information on the compliance laws and rules is available. There are several widely held "myths" about supervision and specialty certification that need clarification.

The following myths are not true:

Myth #1: ***All trainees in their fourth year can work unsupervised half way through their last year***. This status is only available to individuals enrolled in an approved electrical (journeyman) apprenticeship program or approved electrical construction trade (journeyman) training program. You must submit a special request through your apprenticeship/training director for this six-month, nonrenewable certificate and have it in your possession while working. (See WAC 296-46B-965(8) for details.)

Myth #2: ***Electrical trainees are allowed to work 2 hours (25%) anywhere without supervision each day and then go to a job site where supervision is provided***. Supervision means that the certified electrician must be on the same job site as the trainee(s) for a minimum of 75% of each working day. The Electrical Board has previously ruled on this issue and determined that if a trainee is on a job site for 1 hour, then they must be under supervision on that site for not less than 45 minutes.

Myth #3: ***Specialty electricians are automatically trainees when they are working under supervision at tasks outside of their specialty scope***. Specialty electrician certification only allows the individual to perform their specific specialty work without supervision and supervise trainees for a contractor with the same specialty (or "sub-specialty" scope of work crossover per WAC 269-46B, Table 920-1). When employed by any other type of electrical specialty contractor, a specialty electrician is a trainee and must have a current training certificate and work under proper supervision.

Myth #4: ***If I need work done that is outside of my specialty contractor scope of work and my specialty electrician employees, I can employ an (01) journeyman electrician and have him do the work for the company***. The license and scope of work of the contractor is the limiting factor. When an (01) journeyman works for a specialty contractor they are working as specialty electricians and may not perform any electrical work outside the specific scope of their employer. If a contractor needs electrical work outside of their own scope, they must subcontract to another (appropriate) electrical contractor (see the August 2003 edition of this newsletter).

● Electrical Question of the Month

This Month's Question: What is the mandatory marking required for all device and junction boxes (6 x 6 and smaller) in systems defined in the NEC as emergency systems? **A)** Permanently marked so they will be readily identified as a component of an emergency circuit or system, **B)** With an identification plate substantially yellow in color with letters, minimum ½" high, stating **EMERGENCY SYSTEM**, **C)** Painted inside and out substantially orange in color, **D)** Painted inside and out substantially red in color.

Last Month's Question: A 16-foot rigid metal pole used to support a luminaire **A)** may be used as a raceway for the circuit conductors to the luminaire. **B)** must be provided with a minimum 2" X 4" access handhole near the base. **C)** must be provided with a grounding terminal inside the pole. **D)** all of the above. The answer is: **D)** [NEC 410.15(B)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector Vol. 7 No. 6 June 2004

• ALL OPEN WINDOW OPPORTUNITIES WILL END JULY 31, 2004!!!

The "open window" opportunity for certain contractors and administrators (WAC 296-46B-930) and specific specialty electricians (WAC 296-46B-950) will end July 31, 2004. The department will begin full enforcement of the rules for the 03A-Domestic Well, 06A-HVAC/refrigeration system, 06B-HVAC/refrigeration system-Restricted, 07-Nonresidential Maintenance, 07A-Nonresidential Lighting Maintenance, 07B-Residential Maintenance, 07C-Restricted Nonresidential Maintenance, 07D-Appliance Repair, 07E-Equipment Repair, and 10-Door, Gate, and Similar Systems electrical specialties on August 1, 2004. Applications delivered in person or postmarked after July 31st will be returned. NO EXCEPTIONS! Unless mandated to do so by legislative action, **the department will not extend this deadline in rule**. "Word-of-mouth" seems to be the only effective way to reach those operating outside the law. If you know individuals who may be unaware they are working illegally in these specialties, please inform them about the deadline to "grandfather" previous experience and come into compliance.

• Latest Revisions To WAC 296-46B Will Be Effective June 30, 2004

Upon the effective date of the WAC rule, June 30, 2004, the new version of the electrical RCW and WAC will be printed on CDs for distribution to the individuals and firms we regulate. The department will mail one free copy to each contractor license, administrator, electrician, or training certificate holder in good standing. Owners may obtain CDs at regional L&I offices. We will use your current address-of-record in our database, so if you have relocated since your last renewal you should update your mailing address with a *Request For Change Of Address* form available on the forms page at our Web site.

Anyone requesting a printed copy or a second CD must pay the $5 fee required in the WAC rule.

Electrical permits purchased after the WAC effective date will be inspected to the new rules. Plan review projects received after June 30, 2004 will be reviewed for compliance with the new rules. In addition to various technical changes, the rules incorporate a 3.2% fee increase. Important technical changes will be highlighted in future ELECTRICAL CURRENTS articles.

• Compliance Training Provided For Tacoma Power Electrical Inspectors

To promote safety and a competitive marketplace, Tacoma Power managers requested L&I to provide compliance training for their electrical inspectors. On May 26th the Tacoma Power inspectors received a full day of training in licensing compliance requirements and verification techniques. The electrical inspectors will be checking licenses and credentials on electrical installations and making referrals to the department when non-compliance activity is found.

Properly trained and qualified electrical workers produce a safer installation. Tacoma Power joins the City of Seattle in having requested this training from L&I for their electrical inspectors. We encourage all local jurisdictions to join in working with the department in improving statewide compliance with the electrical laws and rules.

• Protect Yourself. Electrical Contractors Must Not Purchase Permits For Another Firm

Since the department is holding individuals and firms accountable for willfully violating installation safety standards (i.e. cutting off grounding electrodes), it is even more critical that electrical contractors obtain permits only for the work their business performs. For example, HVAC contractors installing thermostats and general construction contractors installing temporary power pedestals and poles are required to obtain permits under their business name for work their firm is performing. The statute

requires that "each entity" responsible for electrical work must obtain a permit for that work. If the description of work on an electrical permit is expanded to "cover" the work of another firm, the permit purchaser is held responsible for the work, good or bad. Both the administrator and electrical contractor for the permit holder may be cited and suspended for unsafe installation work shown on their permit.

● Verify The Status Of Continuing Education Courses

Please be informed that there are companies that may take advantage of the mandatory requirement to obtain CEU's for your electrician, master electrician, and administrator certificate renewal. Some national and local electrical education companies offer "CEU" classes locally that are not actually approved by Labor and Industries.

Don't let your time and course fees be wasted; make sure the classes that you're considering are approved for CEU credit in Washington. The electrical section Web site lists approved courses (and valid course numbers) by the year the course was submitted or renewed. Since courses are approved for a three-year period, you may need to check the listings for several years to view all current courses. The expiration date is clearly identified for each course in the lists. You may check the status of a course at: http://www.lni.wa.gov/TradesLicensing/Electrical/LicenseExamEd/Education/ContinueEd/

● WAC Rule Modifies NEC Requirement For Outdoor Spas And Hot Tubs

For an outdoor installation of a self-contained or packaged spa or hot tub for a single-family dwelling, NEC 680.42(C) allows any of the wiring methods in NEC Chapter 3 that contain an insulated or covered copper equipment grounding conductor to be used for the interior building wiring of the circuit serving the equipment. WAC 296-46B-680(10) allows the appropriate NEC Chapter 3 wiring methods to be extended to the outdoor equipment as well. This rule does not alter the requirements for a properly sized (not smaller than 12 AWG), copper equipment grounding conductor, nor does it diminish the Code requirements for proper physical protection with raceway and wiring methods suitable for wet or damp locations when necessary.

● Special Licensing Required To Install And Wire Elevators

Labor and Industries elevator inspectors report that electrical contractors and electricians occasionally install wheelchair lifts, stair lifts, and dumbwaiters or perform alteration work on conveyances without obtaining the appropriate elevator permit. This illegal activity will be compounded when the new elevator mechanic licensing law goes into effect on July 1, 2004. Any person wishing to perform conveyance work regulated under chapter 70.87 RCW and chapter 296-96 WAC must be a licensed elevator mechanic employed by a licensed elevator contractor.

Electrical contractors and electricians will not be able to perform any installation or alteration work on the elevator, or any other conveyance (i.e. wheelchair lift, stair lift, dumbwaiter) "downstream" of the equipment disconnecting means without obtaining the new licensing. For details on the requirements and qualifications for this licensing contact Dotty Stanlaske, Chief Elevator Inspector at 360-902-6128.

● Electrical Question of the Month

This Month's Question: A 16-foot rigid metal pole used to support a luminaire **A)** may be used as a raceway for the circuit conductors to the luminaire… **B)** must be provided with a minimum 2" X 4" access handhole near the base. **C)** must be provided with a grounding terminal inside the pole. **D)** all of the above.

Last Month's Question: A 200-amp panelboard inside a single-family dwelling unit is supplied by a feeder from a 200-amp pedestal service located 75 feet away from the building. The required building disconnecting means must be located… **A)** anywhere inside the building except a bathroom, shower room, or clothes closet, **B)** nearest the point of entrance of the conductors into the building, **C)** so that the feeder raceway extends no more than 15 feet inside the building, **D)** in the service pedestal. The answer is: **A)** [WAC 296-46B-225(2) and –230(11)].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 7 No. 5** **May 2004**

Stakeholder Panel Meets With Inspection Field Supervisors And L&I Managers

Our thanks to panelists (from the left): Glen Washam, Sun River Electric, NECA; Jim Eylander, Eylander Electric, IEC; Joe Devish, Chair of the Electrical Board, NECA; Robert Perasso, Rob's Electrical Inc., IEC; Jessica Ward, Associated Builders and Contractors, Inc.; Brett Lytle, Independent Journeyman; and (not pictured) Tom Prince, McKinstry Co., IBEW.

On April 21st, Labor and Industries Electrical Inspection Field Supervisors, Regional Compliance Managers and Administrators, and central office electrical program staff members received positive comments, constructive criticism, and recommendations from the panelists on the direction the electrical program should be moving in the future. Don Mitchell from American Power Conversion Corporation (APC) donated facilities for the meeting in the KOMO-Fischer Building in Seattle. Attendees had a chance to see a working model of APC's innovative network-critical power systems.

Montana And Washington Agree To Share Electrical Exam Development

The Montana State Electrical Board has agreed to join us in sharing the database that contains the pool of electrical code, theory, and load calculation questions used to create electrician and administrator certification examinations. Both states will contribute to the development of new questions and the maintenance of existing questions, and both will support their own section of the database that contains state-specific law and administrative rules questions. We will be pursuing the future involvement of other states in our reciprocal licensing and certification agreements in this exam development project.

Department Will Begin Approving Continuing Education Courses And Instructors

All the proposals the department received for contracting course and instructor approval involved substantially higher fees for course providers, approximately 2-3 times those currently in rule. The Electrical Board found the proposed increases in fees to be unacceptable. In their April 29th meeting, they delegated authority to the department to approve courses and instructors separately. The existing fee in WAC 296-46B-910(4) for initial approval and renewal will be applied to course applications and instructor applications. The criteria for course and instructor approval that the department will use are in the proposed rules (WAC 296-46B-970) on our Web site at: ***http://www.lni.wa.gov/TradesLicensing/Electrical/Whatsnew/*** under the 2003-2004 Electrical Rule (WAC) Development link.

Modifications To NEC Article 700 Emergency Systems

There are a large number of "energy saving" projects taking place in commercial buildings across the state. Typically, these projects will include new generators, UPS systems, and designs for integration of existing emergency systems into the modifications. The installation of these new back-up power systems often affects existing life safety circuits and/or loads and can create serious safety issues. Since emergency systems are critical to personnel safety, once a modification is made to existing life safety branch circuits and/or loads, the emergency system is required to meet current NEC Article 700 design requirements.

When life safety loads are installed on a generator system, they must be installed on a separate automatic transfer switch and panelboard per NEC 700.9. If battery back-up luminaires are being used for egress or

exit lighting, they must be in compliance with the requirements of NEC 700.12(E) for unit equipment. All battery back-up equipment must be connected to the same branch circuit that supplies the normal lighting for the area and connected ahead of any switches.

● Avoid Citations By Providing Supervision And Reporting Training Hours Legally

A specialty electrical contractor's scope of work determines the type of specialty electrician they can employ and dispatch without supervision. If a specialty electrician's certification type is not the same as the contractor's license type, then the individual must have a training certificate and be working under proper supervision. There are three exceptions: **a)** a journeyman (01) electrician can work (as a specialty electrician) for any type of specialty contractor or, **b)** a residential (02) specialty electrician can work for a (07B) residential maintenance contractor and do work within the contractor's scope without supervision or, **c)** an electrician in a specialty that has a "sub-specialty" detailed in WAC 269-46B, Table 920-1 may work for a sub-specialty contractor within the scope of the more limited sub-specialty.

The following is an updated guide, originally printed in the January 2002 edition of this newsletter, to help contractors, electricians, and trainees provide proper personnel and supervision on their jobsites, report training hours in the appropriate categories, and avoid citations for working illegally.

TYPE OF WORK PERFORMED (see scopes in WAC 296-46B-920)	Contractor must be:	Category of Hours Reported	Trainee must be supervised by:
(01) General Electrical:		New Commercial/Industrial (01)	01
(Including All Types Of Specialty Electrical Work)	01	Report hours in the specific specialty type(s) of work performed.	01 or Appropriate Specialty
(02) Residential Construction	02	Residential (02)	01, 02
(03) Pump and Irrigation	03	Pump and Irrigation (03)	01, 03
(03A) Domestic Well	03 or 03A	Domestic Well (03A)	01, 03, 03A
(04) Sign and Outline Lighting	04	Sign (04)	01, 04
(06) Limited Energy Systems	06	Limited Energy Systems (06)	01, 06
(06A) HVAC/R	06A	HVAC/R (06A)	01, 06A
(06B) HVAC/R-restricted	06A or 06B	HVAC/R-restricted (06B)	01, 06A, 06B
(07) Non-Residential Maintenance	07	Non-Residential Maintenance (07)	01, 07
(07C) Restricted Non-Resid. Maint.	07 or 07C	Restricted Non-Resid. Maintenance (07C)	01, 07, 07C
(07B) Residential Maintenance	02, 07, 07C, or 07B	Residential Maintenance (07B)	01, 02, 07, 07C, 07B
(07A) Non-Resid. Lighting Maint.	07, 07C, or 07A	Non-Resid. Lighting Maintenance (07A)	01, 07, 07C, 07A
(07D) Appliance Repair	07, 07E, or 07D	Appliance Repair (07D)	01, 07, 07E, 07D
(07E) Equipment Repair	07 or 07E	Equipment Repair (07E)	01, 07, 07E
(09) Telecommunications	09	None—WAC 296-46B-945(13)(c)	N/A
(10) Door, Gate, and Similar Systems	10	Door, Gate, and Similar Systems (10)	01, 10

● Electrical Question of the Month

This Month's Question: A 200-amp panelboard inside a single-family dwelling unit is supplied by a feeder from a 200-amp pedestal service located 75 feet away from the building. The required building disconnecting means must be located… **A)** anywhere inside the building except a bathroom, shower room, or clothes closet, **B)** nearest the point of entrance of the conductors into the building, **C)** so that the feeder raceway extends no more than 15 feet inside the building, **D)** in the service pedestal.

Last Month's Question: A(n) _____ branch circuit must supply central heating equipment, other than fixed electrical space heating equipment. A) Multi-wire, B) Individual, C) Multi-purpose, D) Small Appliance. The answer is: **B)** [NEC 422.12].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 7 No. 4** **April 2004**

CORRECTION! Public Hearings For Proposed Changes To The Electrical WAC Rules

Due to scheduling problems, the hearing dates and locations have been changed to:

May 11, 2004—11:00 AM	*May 12, 2004—2:00 PM*
Labor and Industries, Room Spok 4 901 N Monroe, **Spokane** 509-324-2640	Labor and Industries Building, Rm S117 7273 Linderson Wy, **Tumwater** 360-902-6105

We Must Receive Written, E-Mailed, Or Faxed Comments No Later Than May 12, 2004

Mailing Address: Chief Electrical Inspector
Department of Labor and Industries
PO Box 44460, Olympia, WA 98504-4460

FAX Number:
(10 page limit by FAX) 360-902-5292

E-mail: COPC235@lni.wa.gov

Copies of the proposed rules will be available at the public hearings. The proposal is available online at: ***http://www.lni.wa.gov/TradesLicensing/Electrical/whatsnew*** under the 2003-2004 Electrical Rule (WAC) Development link.

CORRECTION! Continuing Education Class and Instructor Approval

First aid classes will continue to be acceptable as industry related continuing education classes. Instructors who have an administrator, master electrician, or electrician certification will meet the minimum qualifications to be an instructor. Instructors who have Red Cross or similar instructor certification will be acceptable as instructors for first aid classes.

Requirements For Contractor Installing Service Laterals For Developers Or Utilities

RCW 19.28.091(1) provides for exemption from the permitting, inspection, licensing, and certification requirements for service lateral installations only if the entity doing the work is employed by the electrical utility. The firm/contractor and utility must have a contract in place (not implied) prior to performing the installation of the underground conduit or conductors. Firms doing this type of work for developers, property owners, or general contractors must be properly licensed electrical contractors; and the contractor must have an electrical work permit and have the installation inspected before covering.

What Contractor Status Is Required To Set Electrical Vaults?

Any vaults containing or intended to contain electrical wiring are considered electrical equipment and must be: permitted and installed by a licensed electrical contractor. We consider vaults to be similar to installing a light pole or sign base or pole (i.e. the concrete and rebar). The historical policy addressing licensing and certification requirements is formally established in rule as part of the scope of work for the (04) sign specialty electrical contractor and electrician in WAC 296-46B-920(2)(d)(i).

We allow a general contractor to prepare, form, and pour the base (i.e. concrete and rebar only) or set sign poles or vaults using a crane with the general contractor's employees, so long as the general contractor is a subcontractor of the electrical contractor and the electrical contractor provides immediate supervision by a journeyman or appropriate specialty electrician. This precedent also applies to the excavation, construction, or placement of large concrete vaults used for electrical and telecommunications installations that come under the jurisdiction of chapter 19.28 RCW.

Electricians Fined For Willful Violations Of Installation Standards

Cutting off ground rods is a bad and potentially costly idea! Two cases for cutting off ground rods were presented to the Electrical Board in January. The board was very clear in its statement to the appellants that installers, administrators, and firms that engage in or encourage willful safety violations will receive

substantial monetary penalties and may be suspended. In these instances, the electricians were fined $1000 each and placed on four-year probation. Any similar serious installation violations during the probationary period will result in immediate two-year suspensions. The appellants avoided immediate suspensions by admitting guilt and apologizing for their lack of judgment.

The Chief Electrical Inspector's office is receiving at least one referral each month for citation action for willful violations from L&I and city jurisdiction inspectors. In rocky areas, proper installation of made electrodes can be difficult and frustrating. However, frustration that leads to hasty and dangerous decisions like cutting off grounds rods will not be tolerated in the electrical trade. The board and the department take compliance with electrical rules seriously and will vigorously penalize individuals and/or firms who make decisions violating the minimum code standards protecting life-safety.

● Coming Rule Changes Concerning The Use Of Type NM Cable

Proposed changes in the Washington Administrative Code, WAC 296-46B-334, expand the use of Type NM cable. The proposal will allow Type NM cable in all single-family dwellings and other structures of Types III, IV, and V construction except as prohibited in NEC 334.12. In "other than single-family dwellings," all cable(s) must be concealed within walls, floors, or ceilings that provide a thermal barrier of material that has at least a 15-minute finish rating as identified in listings of fire-rated assemblies.

The building official will determine the classification for "other than single-family dwellings." In general, Type III and IV may be a maximum of five stories and Type V may be a maximum of three stories as defined in the International Building Code adopted in the State of Washington. The installer will be required to provide the inspector documentation substantiating the type of building construction and finish material rating(s) prior to any electrical inspection.

● L&I Provides Information At Home And Garden Shows

Stop by the L&I information booth at your local Home & Garden shows. The department has dedicated staff and resources to address unlicensed contractors operating in the underground economy. Electrical inspection staff members are often working in the booths with other Specialty Compliance Services staff answering contactor and consumer questions at home shows around the state.

Staffing an information booth provides great customer outreach/education opportunities with thousands of people walking by during the course of an event. The electrical and SCS staff members are there to explain the benefits of hiring legitimate contractors and certified electricians/plumbers, answer minor code and installation questions, and assist those people desiring to file unlicensed contractor complaints.

The March 2004 Wenatchee Home & Garden show attracted 770 people to the L&I booth. In the near future, L&I will be at the following shows:

Clark County Home & Garden Show	April 23 – 25
Spokane Home Remodeler Show	April 30 – May 2
Lower Columbia College Home Show	May 22 – 23

● Plan Review—Load Calculations For Personal Computers

Should a PC's nameplate ratings be used to calculate loads? The department has looked into this question, has done extensive load checks on PC's, and found that the nameplate loads are typically much higher than the actual loads this equipment draws. The load for a typical PC (CPU and monitor) will fit in the 180 volt-amperes allowance computed per NEC 220.3(B)(11). It is not necessary to classify computer loads as "specific appliances or loads" per NEC 220.3(B)(1).

Because most PCs operate as a continuous load, the department will not allow PC receptacles to be calculated as general-use receptacles per NEC 220.3(B)(9) and will not allow the additional demands factors in NEC 220.13. Designers should note that loads for other PC peripherals (e.g. laser printers and copiers) should be classified as "specific appliances or loads" per NEC 220.3(B)(1) and evaluated at their

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nameplate loads. Keep in mind that computers are nonlinear loads and potentially higher neutral loading should be considered in the design of multi-wire branch circuits serving this equipment.

● Electrical Question of the Month

This Month's Question: A(n) _____ branch circuit must supply central heating equipment, other than fixed electrical space heating equipment. **A)** Multi-wire, **B)** Individual, **C)** Multi-purpose, **D)** Small Appliance

Last Month's Question: Appliance branch circuit conductors must be provided with overcurrent protection in accordance with their ampacity as specified in NEC 240.4. The rating of an individual branch-circuit overcurrent device shall not exceed the protective device rating marked on the appliance. The answer is: **A)** True [NEC 422.11(A)].

● Quarterly Compliance Report

This report lists the final judgments for: no electrical contractor's license, hiring uncertified electricians, no electrician certification, and failure to obtain necessary electrical work permits. The report is also posted on the Electrical Program website. The following firms and persons received a final judgment during the 1st quarter of 2004. A final judgment means that all rights of appeal have been exhausted and a penalty is due or has been paid.

Final Judgments of Electrical Laws for the 1st Quarter of 2004

Violator	*Penalty Amount*	*# of Citations*
Violation – No Electrical Contractor's License		
Region 1 – NW Washington		
AFFORDABLE HEATING & COOLING, HAPPY HOLLOW RD, STANWOOD, WA	$ 1,000	2
AWNING SOLUTIONS, INC., GRAVELLY LK DR SW, LAKEWOOD, WA	$ 500	1
BOTROS, TALAT M, 37TH AVE SOUTH, TUKWILA, WA	$ 500	1
BURNS, DAVID, PO BOX, BELLINGHAM, WA	$ 500	1
COMMERCIAL SECURITY SYSTEMS, PO BOX, MOUNT VERNON, WA	$ 500	1
DELTA PACIFIC CONST CORP, PO BOX, WOODINVILLE, WA	$ 500	1
E S E CONSTRUCTION, F&S GRADE RD, SEDRO WOOLLEY, WA	$ 500	1
GEHRING, NATHAN, ROY RD, BELLINGHAM, WA	$ 500	1
HOFBAUER, WAYNE, GUIDE MERIDIAN, BELLINGHAM, WA	$ 500	1
MURR, DALE, CLARK ST, BLAINE, WA	$ 500	1
ROSAS, MANUEL, E SMITH RD, BELLINGHAM, WA	$ 500	1
RUUD, RANDALL R, SAMISH ISLAND RD, BOW, WA	$ 500	1
SKRIPCHENKO, ALEX, 129TH AVE NE, LAKE STEVENS, WA	$ 500	1
SUN SPACES, 132ND AVE NE, BELLEVUE, WA	$ 1,000	1
WILLING, KENT F, 196TH SW, LYNNWOOD, WA	$ 500	1
Region 2 – King County		
BEATTIE, JEFFREY S, 1ST AVE S, SEATTLE, WA	$ 500	1
BIZZELL, STEVEN W, 37TH AVE SW, FEDERAL WAY, WA	$ 500	1
BURDICK'S SCRTY HRDWR SVC INC, RAINIER AVE S, SEATTLE, WA	$ 500	1
C J H CONSTRUCTION UNLIMITED, CRESCENT CIRCLE SW, LAKEWOOD, WA	$ 500	1
COSTELLO, JOEY G, AVONDALE RD NE, WOODINVILLE, WA	$ 500	1
FRONTIER CONSTRUCTION INC, PO BOX, COVINGTON, WA	$ 500	1
GANNON, KORY K, WILLIAMS AVE SO, RENTON, WA	$ 500	1
GHEZZI, TIMOTHY A, 11 AVE NE, SEATTLE, WA	$ 2,000	2
MALIK, DAVID, S 237TH PL, KENT, WA	$ 500	1
NEWCENLITE PACIFIC INC, PACIFIC HWY S, FEDERAL WAY, WA	$ 4,000	1
SADRE NASSIRI, AMIR REZA, N LAKE SAMMAMISH PKWY, REDMOND, WA	$ 500	1
WEATHERS, NATHAN, SR 410 E, BUCKLEY, WA	$ 500	1
WURL, RANDY L, 233RD AVE E, BUCKLEY, WA	$ 500	1
Region 3 – Kitsap & Olympic Peninsulas		
BENNETT, PHILLIP, E VAN BUREN AVE, PORT ORCHARD, WA	$ 500	1
BROTHERS SIGN, 104TH ST CT S, LAKEWOOD, WA	$ 500	1
GEMSTONE BUILDERS LLC, PO BOX, GRAHAM, WA	$ 500	1
GODINA CONSTRUCTION INC, PO BOX, SEATTLE, WA	$ 500	1
HARBOR BUILDERS, CROMWELL DR NW, GIG HARBOR, WA	$ 500	1
LEISURE WATERS INC, 170TH ST E, PUYALLUP, WA	$ 500	1
NEWCENLITE PACIFIC INC, PACIFIC HWY S, FEDERAL WAY, WA	$ 3,000	1
PHELAN, JAMES J, PO BOX, FORD, WA	$ 500	1
REVIVAL DESIGN SEVICE, 40TH AVE E, TACOMA, WA	$ 6,000	1

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SURFACE WORKS, PO BOX, SUMNER, WA	$ 500	1
TURNER, TERRENCE N, S 316TH PL, FEDERAL WAY, WA	$ 1,000	1
Region 4 – SW Washington		
ACTION GROUP UTILITIES CO, A, 93RD AVE SW, OLYMPIA, WA	$ 500	1
BRASWELL, DAVID, HIDDEN FOREST DR SE, LACEY, WA	$ 500	1
EXTERIORS INC, SE 120 AVE, VANCOUVER, WA	$ 500	1
HART, ED, MAIN ST, WISHRAM, WA	$ 500	1
MOBILITY CONCEPTS INC, MILWAUKEE WAY, TACOMA, WA	$ 500	1
MUNTER CORP, 30TH ST NE, AUBURN, WA	$ 500	1
NOVOTNY, STEVE, PO BOX, PE ELL, WA	$ 1,000	2
PACIFIC AIR INC, MARTIN WY, OLYMPIA, WA	$ 500	1
POP SIGN, SW 187TH AVE, BEAVERTON, OR	$ 500	1
ROBISON CONSTRUCTION INC, PO BOX, SUMNER, WA	$ 500	1
TACOMA TENT & AWNING CO INC, NORTH G ST, TACOMA, WA	$ 500	1
Region 5 – Central Washington		
NAVARRO, ROBERT, E TOPPENISH AVE, TOPPENISH, WA	$ 500	1
WRIGHT, LEO A, TIBBLING RD, SELAH, WA	$ 500	1
Region 6 – Eastern Washington		
BRITTON, JOHN, AZTEC LANE, CHENEY, WA	$ 500	1
CONCRETE KING, N FOREST CT, SPOKANE, WA	$ 500	1
DETZ, RONALD A, HWY 291, NINE MILE FALLS, WA	$ 500	1
HIGH MARK COMMUNICATIONS LLC, PO BOX, DEER PARK, WA	$ 500	1
TYKO MECHANICAL LLC, N WARREN, HAYDEN, ID	$ 1,500	1
Central Office		
DYNAMIC LAUNDRY SYSTEMS INC, NE 124TH ST, KIRKLAND, WA	$ 500	1
GENESEE FUEL & HEATING CO, INC, S GENESEE ST, SEATTLE, WA	$ 1,500	3
LUCORE, WILLIAM D, WAGNER RD, KELSO, WA	$ 500	1
MALONE'S LANDSCAPE CONTR INC, 148TH AVE SE, KENT, WA	$ 1,500	3
NORTHWEST CONTROL COMPANY, PO BOX, CLACKAMAS, OR	$ 500	1
WHITE, BRYCE L, PO BOX, STARTUP, WA	$ 1,000	1

Violation – Hiring Uncertified Electrician

Region 1 – NW Washington		
L & L ELECTRIC INC, CHENNAULT BEACH RD, MUKILTEO, WA	$ 500	1
Region 2 – King County		
ANDERSON ELECTRIC CONTROLS INC, S 212TH ST, KENT, WA	$ 100	1
LEA, AURORA AVE N, SEATTLE, WA	$ 500	1
NEWCENLITE PACIFIC INC, PACIFIC HWY S, FEDERAL WAY, WA	$ 1,000	2
Region 4 – SW Washington		
AMP ELECTRIC, NE FOURTH PLAIN RD U, VANCOUVER, WA	$ 350	1
QUADRANT SECURITY INC, PO BOX, PORTLAND, OR	$ 600	1
S M E CORP, A STREET, TACOMA, WA	$ 500	1
Central Office		
BOLEY ELECTRIC INC, BIRCHWAY, LYNNWOOD, WA	$ 100	1
BROTHERS ELECTRIC, E 29TH, SPOKANE, WA	$ 200	2
CAPITAL DEVELOPMENT CO, PO BOX, LACEY, WA	$ 100	1
PARAGON INTERNATIONAL LLC, 20TH AVE NW, SEATTLE, WA	$ 300	3
SEMPER FI ELECTRIC INC, PO BOX, EVERSON, WA	$ 100	1
TOTAL ENERGY MANAGEMENT INC, BUTLER LOOP RD, RICHLAND, WA	$ 100	1

Violation – Uncertified Electrician

Region 1 – NW Washington		
BAGLEY, DAVID M, S MUTINY BAY RD, FREELAND, WA	$ 100	1
BURNS, DAVID, PO BOX, BELLINGHAM, WA	$ 250	1
GEHRING, NATHAN, ROY RD, BELLINGHAM, WA	$ 250	1
HUTCHENS, STEWART L, 19TH, EVERETT, WA	$ 250	1
MERRITT, THOMAS EDWARD, 103RD LANE NE, KIRKLAND, WA	$ 250	1
MURR, DALE, CLARK ST, BLAINE, WA	$ 250	1
NAWFEL, JOSH, 112TH ST SW, EVERETT, WA	$ 250	1
NUNEZ, BENJAMIN RYAN, WETMORE AVE, EVERETT, WA	$ 100	1
PETERSON, DENNIS, PO BOX, WOODINVILLE, WA	$ 250	1
ROSAS, MANUEL, E SMITH RD, BELLINGHAM, WA	$ 250	1
SIMONSON, JAREME, 84TH ST SW, MUKILTEO, WA	$ 250	1
TOMKINS, HOWARD NATHAN, 182ND AVE SE, MONROE, WA	$ 250	1
WATER, DAN, PO BOX, WOODINVILLE, WA	$ 250	1
WILLIAMS, WALLACE RAY, 186TH PLACE SW, LYNNWOOD, WA	$ 350	2
Region 2 – King County		
BOOKOUT, TONY D, 37TH ST SE, AUBURN, WA	$ 250	1
CHRISMAN, ANDREW L, N 193RD ST, SHORELINE, WA	$ 250	1
DAVIDSON, RICHARD, THUJA AVE, YELM, WA	$ 250	1
GHEZZI, TIMOTHY A, 11 AVE NE, SEATTLE, WA	$ 250	1
GOMEX, JUAN JOSE, 15TH AVE NE, SEATTLE, WA	$ 250	1
GRINNELL, THOMAS, 47TH DR NE, MARYSVILLE, WA	$ 500	1
HARRISON, CHRISTOPHER W, RENTON AVE S, SEATTLE, WA	$ 250	1
HARTSON, PATRICK J, 150TH SW, LAKEWOOD, WA	$ 250	1
HOLMES, LLOYD, SE 291ST, AUBURN, WA	$ 100	1
LEBLANC, JOSEPH DONALD, 189TH AVE CT E, SUMNER, WA	$ 250	1

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ROSENLUND, JOHN M, 420TH AVE SE, NORTH BEND, WA	$ 250	1
WEBB, BRUCE, HI CREST DR, AUBURN, WA	$ 100	1
WILLIAM, ALLAN, 27TH ST SE, AUBURN, WA	$ 250	1
WILLIAMS, JEFFREY T, 1ST AVE SW, BURIEN, WA	$ 250	1
Region 3 – Kitsap & Olympic Peninsulas		
AMIOTTE, BRIAN, 58TH ST CT E, PUYALLUP, WA	$ 250	1
BOWEN, PAT, S 11TH ST, TACOMA, WA	$ 250	1
BRUNTZEL, GREG E, TIMBERTRAIL RD E, PORT ORCHARD, WA	$ 250	1
COURTS, LENNY ALANE, FOREST RIM CT N, PUYALLUP, WA	$ 250	1
COURTS, LON RUSSELL, FOREST RIM CT N, PUYALLUP, WA	$ 250	1
COURTS, THOMAS L, FOREST RIM CT N, PUYALLUP, WA	$ 250	1
HAZEN, PAUL A, ALLEN RD, ONALASKA, WA	$ 250	1
SELBY, ROBERT R, 93RD ST E, TACOMA, WA	$ 250	1
VANAUSDLE, RANDALL E, CARNE, PORT ANGELES, WA	$ 250	1
WHEELER, ROB A, 170TH ST E, PUYALLUP, WA	$ 250	1
WILCOX, GUY RICHARD, OYLER RD, WINLOCK, WA	$ 250	1
ZIGLER, DAVID, 142ND AVE E, PUYALLUP, WA	$ 250	1
Region 4 – SW Washington		
ATAMANYUK, VASILIY, SE BUSH ST, PORTLAND, OR	$ 250	1
BUNTIN, MATT D, WILDCAT ST SE, OLYMPIA, WA	$ 250	1
BURNS, EON, ST HELENS AVE, VANCOUVER, WA	$ 250	1
FOLEY, MICHAEL, NE 122ND AVE, BATTLE GROUND, WA	$ 250	1
GUILLEN, DENNIS W, P O BOX, VANCOUVER, WA	$ 250	1
HART, ED, MAIN ST, WISHRAM, WA	$ 250	1
KIM, HARRY J, SW 187TH AVE, BEAVERTON, OR	$ 250	1
MCNEIL, DAN, BAYVIEW DR, SHELTON, WA	$ 250	1
MOUTARDIER SCOTT E, NE 54THE AVE, VANCOUVER, WA	$ 250	1
NOVOTNY, STEVE, PO BOX, PE ELL, WA	$ 250	1
NUTTLE, GEORGE T, NE 31ST AVE, RIDGEFIELD, WA	$ 250	1
SANNES, SEAN A, NE 89TH AVE, VANCOUVER, WA	$ 750	2
SPOLNICK, EDWARD D, 81ST AVE E, PUYALLUP, WA	$ 250	1
TRAILOR, KENNETH A, S 43RD ST, TACOMA, WA	$ 250	1
Region 5 – Central Washington		
GROOM, ROBERT G JR, W NORA, SPOKANE, WA	$ 500	1
Region 6 – Eastern Washington		
EISEMAN, JIM, BLANCHARD RD, ELK, WA	$ 250	1
HARMS, JAMES P, E EUCLID AVE, OTIS ORCHARDS, WA	$ 100	1
MARX, DENNIS R, N FOREST CT, SPOKANE, WA	$ 250	1
SMITH, ZANE, E OLIVE AVE, SPOKANE, WA	$ 250	1
WORLEY, CHARLES P, FERTILE VALLEY RD, NEWPORT, WA	$ 250	1
WORLEY, TIM, W LONG LAKE RD, FORD, WA	$ 250	1
Central Office		
ADAMEK, SEAN R, S ANDERSON PL, KENNEWICK, WA	$ 100	1
ATON, KELLY ROSS, PO BOX, ROCHESTER, WA	$ 100	1
BROWN, MICHAEL J, BEACH DR SW, SEATTLE, WA	$ 200	2
DO, TRI, 9TH AVE SW, SEATTLE, WA	$ 300	3
EVANS, MICHAEL JOHN, SE 196TH, RENTON, WA	$ 350	2
GIBBONEY, CARRIE ANN, GUIDE MERIDIAN, BELLINGHAM, WA	$ 100	1
MCDANOLD, WARREN, 89TH PL NE, MARYSVILLE, WA	$ 250	1
MITCHELL, ZACH, 328TH PLACE SE, FALL CITY, WA	$ 250	1
MOE, CHRISTOPHER TODD, PO BOX, ORTING, WA	$ 200	2
PEREZ, CHRISTOPHER, S 6TH, PASCO, WA	$ 300	3
RENEAU, THOMAS W, 186TH ST NE, ARLINGTON, WA	$ 400	4
SABUTIS, GERALD D, 149TH AVE E, GRAHAM, WA	$ 100	1
WARD, ROB A, GREENWAY AVE, LONGVIEW, WA	$ 250	1

Violation – No Electrical Permit

Region 1 – NW Washington		
A L C ELECTRIC CORPORATION, N 193RD ST, SHORELINE, WA	$ 250	1
ANM ELECTRIC INC, 172ND AVE NE, REDMOND, WA	$ 250	1
BOB'S HEATING & A/C INC, NE 126TH PL, KIRKLAND, WA	$ 250	1
CHAPMAN, KIM, LUNDEEN PKY, LAKE STEVENS, WA	$ 50	1
DAD'Z ELECTRICAL SRVC & REPAIR, 19TH PL W, EVERETT, WA	$ 250	1
DUNCAN ELECTRIC INC, JIM CREEK RD, ARLINGTON, WA	$ 250	1
EDWARDS, KIRK L, 152ND PL SE, MILL CREEK, WA	$ 50	1
FILIPPOV, RUSLAN, CALLOW ROAD, LAKE STEVENS, WA	$ 250	1
FUNSTON, DARREL, SHELBY RD, LYNNWOOD, WA	$ 50	1
HOLMES, STEVE, BEACH AVE, MARYSVILLE, WA	$ 50	1
JONES LIGHTING MAINTENANCE INC, 90TH AVE NE, KENMORE, WA	$ 250	1
KEITHLY ELECTRIC CO, SOUTH DIRECTOR, SEATTLE, WA	$ 1,000	1
MENDOZA, COREY, 325TH PL NW, STANWOOD, WA	$ 50	1
MOLZAHN, LARRY, WALNUT, EDMONDS, WA	$ 50	1
SMITH, REUBEN, HWY 9 SE, WOODINVILLE, WA	$ 50	1
SMOKEY ELECTRIC, PO BOX, ARLINGTON, WA	$ 250	1
SWANSON, TERRY, TOMA LANE, CLINTON, WA	$ 50	1
Region 2 – King County		
A & D HEAT-VENT-A/C, CALISTOGA ST E, ORTING, WA	$ 250	1

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A L C ELECTRIC CORPORATION, N 193RD ST, SHORELINE, WA	$ 250	1
ACCO ENGINEERED SYSTEMS, N CENTRAL AVE, KENT, WA	$ 250	1
AIRE PRO INC, S 344TH ST, FEDERAL WAY, WA	$ 1,000	1
AMERICAN BUILDING SUPPLY INC, 42ND ST NE, AUBURN, WA	$ 250	1
ANDERSON ELECTRIC CONTROLS INC, S 212TH ST, KENT, WA	$ 250	1
BURDICK'S SCRTY HRDWR SVC INC, RAINIER AVE S, SEATTLE, WA	$ 250	1
CEDAR RIVER ELECTRIC, SE 245TH ST, MAPLE VALLEY, WA	$ 500	1
COMFORT MECHANICAL INC, S 220TH ST, KENT, WA	$ 250	1
DEVOS, ART, 160TH SE, AUBURN, WA	$ 50	1
DIAMOND BAY ELECTRIC INC, PO BOX, MAPLE VALLEY, WA	$ 250	1
DIGITECH HOME SYSTEMS LLC, 124TH AVE NE, BELLEVUE, WA	$ 250	1
DIRECT TELECOMMUNICATIONS LLC, INDUSTRY DR, SEATTLE, WA	$ 250	1
EASTON REFRIGERATION LLC, PO BOX, RENTON, WA	$ 250	1
ELECTROMATIC SALES & SRVC INC, 152ND AVE NE, REDMOND, WA	$ 250	1
GOODE, MIKE, PORTER ST, ENUMCLAW, WA	$ 250	1
H P PROPERTIES LLC, SE 28TH ST, MERCER ISLAND, WA	$ 250	1
HOBBS, GARY L, 3RD ST E, SUMNER, WA	$ 50	1
HODSON HODSON & HODSON, INC, WEST STEWART AVE, PUYALLUP, WA	$ 250	1
INTEGRITY ELECTRIC INC, KENNEDY RD NE, TACOMA, WA	$ 250	1
KAHSSAI, YONATHAN, SOUTH SUNNY CREST RD, SEATTLE, WA	$ 50	1
KOVAL, VLADIMIR, 104TH ST E, BONNEY LAKE, WA	$ 50	1
LINDER ELECTRIC INC, 180TH NE, REDMOND, WA	$ 250	1
MUSTAFA, MUJUDEA, 164TH ST, TUKWILA, WA	$ 50	1
NEWCENLITE PACIFIC INC, PACIFIC HWY S, FEDERAL WAY, WA	$ 250	1
NORTHWEST ELECTRIC, S 279TH ST, AUBURN, WA	$ 250	1
NORTHWESTERN ELECT SERVICES CO, 144TH ST E, PUYALLUP, WA	$ 250	1
OMEGA ELECTRIC, KOEPPEN RD, RAINIER, WA	$ 250	1
PACIFIC NORTHWEST SIGN CO, SE 27 PL, BELLEVUE, WA	$ 1,000	1
PARKER ELECTRIC, SW SPOKANE ST, SEATTLE, WA	$ 250	1
POWER DESIGNS INC, 169TH ST S, SPANAWAY, WA	$ 250	1
PUYALLUP HEATING & A/C, 15TH ST SE, PUYALLUP, WA	$ 250	1
RIMROCK ELECTRICAL SERVICE LLC, 189TH AVE SE, COVINGTON, WA	$ 250	1
SEATTLE SHEET METAL & HEATING, 16TH AVE SW, SEATTLE, WA	$ 250	1
SECURITAS SECURITY SYS USA INC, AVALON RIDGE PKWY, NORCROSS, GA	$ 250	1
T I NORTHWEST CORP, 23RD ST SE, PUYALLUP, WA	$ 250	1
TALL'S ELECTRIC INC, 249TH AVE SE, ENUMCLAW, WA	$ 250	1
WATSON SECURITY, RAINIER AVE S, RENTON, WA	$ 250	1
WESTERN TELCOM, 38TH AVE S, AUBURN, WA	$ 250	1
WILKERSON COMMUNICATIONS INC, 112TH ST E, PUYALLUP, WA	$ 250	1
Region 3 – Kitsap & Olympic Peninsulas		
DAY WIRELESS SYSTEMS, PO BOX, MILWAUKIE, OR	$ 250	1
ELECTRIC WORKS, THE, PO BOX, GRAHAM, WA	$ 250	1
INDUSTRIAL COMM ELECTRIC INC, S 134TH PL, TUKWILA, WA	$ 250	1
LUCKY ELECTRIC, 136TH ST CT E, TACOMA, WA	$ 250	1
ROBBLEE'S TOTAL SECURITY INC, TACOMA AVE S, TACOMA, WA	$ 250	1
Region 4 – SW Washington		
AMP ELECTRIC, NE FOURTH PLAIN RD, VANCOUVER, WA	$ 250	1
CHAMP, KENNETH, BURCHETT RD, ONALASKA, WA	$ 250	1
JACK DAVIS PREMIER SHOWS, PO BOX, WILSONVILLE, OR	$ 250	1
ONALASKA ELECTRIC, PO BOX, ONALASKA, WA	$ 2,000	2
UNIQUE DESIGNS INC, NE 100TH ST, VANCOUVER, WA	$ 250	1
Region 5 – Central Washington		
PERRY TECHNICAL INSTITUTE, W WASHINGTON, YAKIMA, WA	$ 250	1
PRO SIGN INC, E KNOX, SPOKANE, WA	$ 250	1
YAKIMA COUNTY, N FIRST ST, YAKIMA, WA	$ 250	1
Region 6 – Eastern Washington		
CONCRETE KING, N FOREST CT, SPOKANE, WA	$ 250	1
KASTAWAY ELECTRIC, DEETER RD, NEWPORT, WA	$ 250	1
SHERIDAN ELECTRIC INC, W TEAL AVE, SPOKANE, WA	$ 250	1
TYKO MECHANICAL LLC, N WARREN, HAYDEN, ID	$ 1,000	1
Central Office		
INDEPENDENT FOOD PROCESSORS CO, PO BOX, SUNNYSIDE, WA	$ 3,500	7

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 7 No. 3** **March 2004**

Public Hearings For Proposed Changes To The Electrical WAC Rules

May 3, 2004—10:30 AM	***May 4, 2004—10:30 AM***
Labor and Industries Building, Room S119 7273 Linderson Way, **Tumwater** 360-902-6105	Labor and Industries, Room MLAK 1 3001 W. Broadway Ave, **Moses Lake** 509-764-6900

We Must Receive Written, E-Mailed, Or Faxed Comments No Later Than May 4, 2004

Mailing Address: Chief Electrical Inspector
Department of Labor and Industries
PO Box 44460, Olympia, WA 98504-4460

FAX Number:
(10 page limit by FAX) 360-902-5292
E-mail: COPC235@lni.wa.gov

The proposed rule changes will be available online soon (when the code reviser releases them) at: ***http://www.lni.wa.gov/TradesLicensing/Electrical/whatsnew/*** under the 2003-2004 Electrical Rule (WAC) Development link. Copies of the proposed rules will also be available at the public hearings.

Continuing Education Class/Instructor Approval – Seeking Contractor's Proposal

The department is searching for a contractor to assume the responsibilities for approving continuing education classes and instructors. The Chief Electrical Inspector will accept proposals until April 15, 2004. The Electrical Board currently approves about 250 to 300 classes each year. The request for proposal is available online at: ***http://www.lni.wa.gov/TradesLicensing/Electrical/whatsnew/***.

Previous *ELECTRICAL CURRENTS* Articles

The department adopted the 2002 National Electrical Code (NEC) in May of 2003. Many changes were incorporated into the 2002 revision. Installers should be aware that previous articles in the *ELECTRICAL CURRENTS* might no longer be applicable. You should verify that revisions have not changed the interpretations in previous *ELECTRICAL CURRENTS*.

Outdoor Hot Tubs And Spas

NEC 680.40 requires spas and hot tubs comply with Part I and Part IV of Article 680. NEC 680.42 specifies that spas and hot tubs installed outdoors must also meet the requirements of Part II-Permanently Installed Pools. By reference, NEC 680.42 requires any spa or hot tub installed outdoors to comply with the same requirements as permanently installed pools. In 2002, NEC Article 680 was completely restructured. In the restructuring, the requirements for area lighting, receptacles, and equipment (NEC 680.22) were written into Part II and now apply to outdoor hot tubs and spas.

This interpretation differs from previous interpretations made regarding outdoor spas and hot tubs. Previous interpretations were based on the 1999 edition of the National Electrical Code.

Continuing Education Class And Instructor Approval

EFFECTIVE IMMEDIATELY, new continuing education classes and instructors must meet the following guidelines.

- Industry related classes must be based on:
  - Codes or rules included in the NEC, chapter 19.28 RCW, or WAC 296-46B;
  - Electrical theory based on currently published documents that are readily available for retail purchase; and/or
  - Materials and methods that pertain to electrical construction, building management systems, electrical maintenance, or workplace health and safety.

- Code update classes must be based on the latest adopted version of the NEC and must specify the NEC articles to be addressed in the class presentation.
- RCW/WAC update classes must be based on the latest adopted versions of the chapter 19.28 RCW and/or WAC 296-46B.
- The minimum allowed length of a class is four hours. The maximum allowed credit for a class is twenty-four hours. Class length must be based on two-hour increments (e.g. 4, 6, 8, etc.). Class length must be based on the following:
    - Classroom instruction will be based on the total hours the individual is in the classroom.
    - Correspondence instruction will be based on a written examination (i.e. twenty-five questions will equal two hours of classroom instruction).
    - Internet instruction will be based on a written examination (i.e. twenty-five questions will equal two hours of classroom instruction).
- Examinations must not direct or point the individual to a correct answer or reference. Individuals must be responsible to determine the correct answer without the assistance of the sponsor. To successfully complete a correspondence or Internet class, a participant must score at least 70% on the examination required for the class.
- Class material must include supplementary written instruction material appropriate to the type and length of the class; and if the class is code update and is provided via correspondence or internet, the sponsor must provide the individual with a nationally recognized, copyrighted, publication that covers all changes to the NEC. Class material may include: supplementary Internet material, supplementary texts or other material as appropriate.
- Instructors seeking approval must meet one of the following minimum requirements:
    - Have a valid Washington General Administrator's certificate or General Master Electrician's certificate; and have appropriate knowledge of and experience working as an electrical/electronic trainer.
    - Be accredited by the Washington Work Force Training and Education Coordinating Board. The instructor's normal duties must include providing electrical/electronic education.
    - Be a high school vocational teacher, community college, college, or university instructor. The instructor's normal duties must include providing electrical/electronic education.
    - Work for and be approved by a manufacturer of electrical products to teach electrical continuing education.
    - Work for the department while teaching department classes.

● Electrical Question of the Month

This Month's Question: Appliance branch circuit conductors must be provided with overcurrent protection in accordance with their ampacity as specified in NEC 240.4. The rating of an individual branch-circuit overcurrent device shall not exceed the protective device rating marked on the appliance. **A)** True, **B)** False.

Last Month's Question: Electrical maintenance of a household electric potable water heater in a dwelling unit is within the scope of work of all of the following electrical specialties, except: **A)** 02-residential, B**)** 06A-HVAC/refrigeration, **C)** 07-nonresidential maintenance, **D)** 07D-appliance repair. The answer is **B)** [WAC 296-46B-920(2)(f) and WAC 296-46B-020(28)(b)].

● Compliance Report

This report is a result of requests from you, our stakeholders and customers. The report is the first of a quarterly series listing the final judgments for: no electrical contractor's license, hiring uncertified electricians, no electrician certification, and failure to obtain necessary electrical work permits. Consumers and contractors will now have information about those who have violated the electrical laws regarding these issues. The report is also posted on the Electrical Program website.

The following firms and persons received a final judgment during the 4th quarter of 2003. A final judgment means that all rights of appeal have been exhausted and a penalty is due or has been paid.

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Final Judgments of the Electrical Laws

For the 4th Quarter of 2003

Violator	*Penalty Amount*	*# of Citations*
NOTE: *Penalty amounts may vary due to previous violations.*		
Violation – No Electrical Contractor's License		
Region 1 – NW Washington		
COLE, WARREN G, P O BOX, MOUNT VERNON, WA	$ 200	1
COMPACTION & RECYCLING EQUIP, NE 122 AVE, PORTLAND, OR	$ 500	1
DALTON, PAUL R, 139TH PL NE, MARYSVILLE, WA	$ 1,000	2
DRIFTWOOD COMMUNICATIONS INC, HANNEGAN RD, LYNDEN, WA	$ 1,500	1
FISHER, KEITH ALAN, 48TH DR NE, MARYSVILLE, WA	$ 500	1
HAPPY HOUSE CONSTRUCTION CO, 121ST ST SE, EVERETT, WA	$ 500	1
MILLER'S INC, 88TH AVE W, EDMONDS, WA	$ 500	1
POWER CO OF WASH INC, THE, SMOKEY POINT BLVD, ARLINGTON, WA	$ 500	1
SPENCE, SPENCER, 210TH ST SW, LYNNWOOD, WA	$ 500	1
SUPERIOR ELECTRIC NW INC, PO BOX, BOTHELL, WA	$ 3,500	14
Region 2 – King County		
DELUX HOME SOLUTIONS, SE NEWPORT WAY, BELLEVUE, WA	$ 500	1
FULL HOUSE REMODELING, 236TH ST SW UNIT B, EDMONDS, WA	$ 500	1
HILLYARD HEATING, SW 99, SEATTLE, WA	$ 500	1
JET ELECTRIC, S MERIDIAN, PUYALLUP, WA	$ 500	1
NORTH PARK HEATING INC, BALLINGER WAY N E, SEATTLE, WA	$ 500	1
SUPERIOR HEATING, PO BOX, PUYALLUP, WA	$ 500	1
WHEELER, ALAN P, S E 196TH PL, RENTON, WA	$ 500	1
WU CONSTRUCTION LLC, NE 94TH ST, SEATTLE, WA	$ 500	1
Region 3 – Kitsap & Olympic Peninsulas		
ACCENT REFRIGERATION, PO BOX POST DEPOT 4, VICTORIA, BC	$ 500	1
D P A SIGNS, PO BOX, SEATTLE, WA	$ 500	1
GARCIA, BERT A, PO BOX, ORTING, WA	$ 500	1
ONSITE COMMERCIAL, NE 33RD PL, BELLEVUE, WA	$ 4,500	9
PAYNE, JAMES, HIGH SIERRA LN NW, SILVERDALE, WA	$ 500	1
Region 4 – SW Washington		
CHANDLER ELECTRIC, SW CARSON, PORTLAND, OR	$ 500	1
COASTAL FINISHING SYSTEMS INC, S PEBBLE PL, BELLINGHAM, WA	$ 500	1
GUDYKA, BRUNO, 50TH AVE S, AUBURN, WA	$ 500	1
MACSHANE, ROBERT M, HELENA DR NE, BREMERTON, WA	$ 500	1
Region 5 – Central Washington		
ERICKSON, WADE L, PO BOX, BREWSTER, WA	$ 1,000	2
MILANEZ, ADAN C, STASSEN WY, GRANDVIEW, WA	$ 500	1
Region 6 – Eastern Washington		
A PUMP, N MONROE, DEER PARK, WA	$ 500	1
HOGAN, MICHAEL D, PO BOX, DAVENPORT, WA	$ 500	1
RIVERSDALE BUILDERS LLC, ELK-CHATTAROY, ELK, WA	$ 500	1
SUNDANCE EXCAVATING, INC., SUNDANCE DR, NINE MILE FALLS, WA	$ 500	1
WARNER CONST, DRISKILL RD, NEWPORT, WA	$ 500	1
Central Office		
COLE, WARREN G, P O BOX, MOUNT VERNON, WA	$ 700	2

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WALL STREET REFRIGERATION, PO BOX, ODESSA, WA	$ 500	1
WHITE, BRYCE L, PO BOX, STARTUP, WA	$ 1,000	2

Violation – Employing an Uncertified Electrician

Region 1 – NW Washington		
MILLER'S INC, 88TH AVE W, EDMONDS, WA	$ 100	1
Region 2 – King County		
D L SPARKS, TOLT RIVER RD NE, CARNATION, WA	$ 100	1
Region 4 – SW Washington		
TAURUS ELECTRIC, 73RD AVE SE, OLYMPIA, WA	$ 500	1
Central Office		
ADVANCED ELEC & ALARM SYS INC, PO BOX, SPOKANE, WA	$ 100	1
AMTECH LIGHTING SERVICES, E ORANGEWOOD AVE, ANAHEIM, CA	$ 600	6
CHECKPOINT SECURTY SYSTEMS GROUP INC, SHADY OAK RD, EDEN PRAIRIE, MN	$ 400	4
D & S ELECTRIC INC, PO BOX, SUMNER, WA	$ 300	3
J R ELECTRIC INC, 188TH AVE SE, KENT, WA	$ 400	4
LAD IRRIGATION CO INC, PO BOX, MOSES LAKE, WA	$ 100	1
LINDBERG ELECTRIC CO INC, NICKERSON ST, SEATTLE, WA	$ 1,400	4
PINKERTON SYS INTEGRATION INC, AVALON RIDGE PKWY, NORCROSS, GA	$ 400	4
PINNACLE ELECTRIC INC, NW 50TH, SEATTLE, WA	$ 100	
POWER PLUS ELECTRIC, EASTSIDE RD, MILTON-FREEWATER, OR	$ 200	2
SEA TAC ELECTRIC INC, S 220TH ST, KENT, WA	$ 100	1
STREAMLINE ELECTRIC, E 18TH ST, VANCOUVER, WA	$ 200	2

Violation – Uncertified Electrician

Region 1 – NW Washington		
BOORSE, GORDON, NE 122ND AVE, PORTLAND, OR	$ 250	1
BOTROS, TALAT M, 37TH AVE SOUTH, TUKWILA, WA	$ 250	1
MILLER, ERIC H, 88TH AVE W, EDMONDS, WA	$ 100	1
RUSSELL, DANIEL L, S DAVIES RD, LAKE STEVENS, WA	$ 250	1
SCHWIGER, ANDREW LEE, 35TH AVE SW, SEATTLE, WA	$ 250	1
SPENCE, SPENCER, 210TH ST SW, LYNNWOOD, WA	$ 250	1
TREHERNE, SIDNEY J, 121ST ST SE, EVERETT, WA	$ 250	1
ZINKLE, GREG, AVE D, SNOHOMISH, WA	$ 100	1
Region 2 – King County		
BASRA, SUKVED, PO BOX, KIRKLAND, WA	$ 250	1
DEVORE, JAMES R, SE 238TH ST, KENT, WA	$ 100	1
HUSEBY, SCOTT A, 10TH ST SW, PUYALLUP, WA	$ 250	1
JOHNSON, JOSHUA D, SW WALDEN DR, BEAVERTON, OR	$ 100	1
JOHNSON, RAVEN, TAYLOR AVE NW, RENTON, WA	$ 100	1
LUX, LOREN P, SE NEWPORT WAY, BELLEVUE, WA	$ 100	1
WEHRWEIN, LARRY J, NE 136TH PL, KIRKLAND, WA	$ 250	1
Region 3 – Kitsap & Olympic Peninsulas		
COLLINS, STEPHEN B, CHICO WAY NW, BREMERTON, WA	$ 250	11
VANAUSDLE, RANDALL E, CARNE, PORT ANGELES, WA	$ 250	1
BREIEN, ROBERT A, COLUMBIA HGTS, LONGVIEW, WA	$ 250	1
Region 4 – SW Washington		
BUSH, WAYNE ALAN, ASH ST, FORREST GROVE, OR	$ 100	1
MACSHANE, ROBERT M, HELENA DR NE, BREMERTON, WA	$ 250	1

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ROSEBORO, STANLEY G, LAKSONEN LP, SPRINGFIELD, OR	$ 250	1
VOSS, JEREMY A, PIONEER WAY, SHELTON, WA	$ 250	1
Region 6 – Eastern Washington		
HARRELL, LARRY, ELK CHATTAROY RD, ELK, WA	$ 250	1
HOGAN, MICHAEL D, PO BOX, DAVENPORT, WA	$ 250	1
WINLOW, DAVE, SUNDANCE DR, NINE MILE FALLS, WA	$ 250	1
Central Office		
COMAN, SHAD, N HAMILTON ST, SPOKANE, WA	$ 100	1
HODGIN, TYSON R, SE 13TH, MILTON FREEWATER, OR	$ 200	2
KNOWLDEN, TOM H, 227TH PL SE, MAPLE VALLEY, WA	$ 400	4
MANION, GREG, 22ND ST CT W, UNIVERSITY PLACE, WA	$ 600	6
MOE, CHRISTOPHER TODD, PO BOX, ORTING, WA	$ 100	1
MOLNER, PETER DAVID, 21ST AVE SW, SEATTLE, WA	$ 250	1
SLOAN, CHARLES L JR, 170TH AVE E, SUMNER, WA	$ 400	4
SMITH, DARL E, W NORA, SPOKANE, WA	$ 100	1
SMITH, JERROD R, 29TH AVE W, BRIER, WA	$ 650	5
THORNQUIST, PATRICK J, BOTHELL EVERETT HWY, BOTHELL, WA	$ 100	1

Violation – Failure to Obtain an Electrical Work Permit

Region 1 – NW Washington		
A C ELECTRIC SERVICE INC, SW 43RD, RENTON, WA	$ 1,000	1
A-1 COMMUNICATIONS & ENTERTNMT, MITCHELL DR, LAKE STEVENS, WA	$ 500	2
ALL WAYS AIR CONTROL INC, S CENTER ST, TACOMA, WA	$10,500	8
ALLIED SAFE & VAULT CO INC, W 2ND AVE, SPOKANE, WA	$ 250	1
B B & T SIGN SERVICES, BOTHELL-EVERETT HWY, MILL CREEK, WA	$ 250	1
BINGEL, RONALD D II, GILKEY RD, BURLINGTON, WA	$ 250	1
BRENNAN HEATING COMPANY INC, S 134TH PL, TUKWILA, WA	$ 250	1
CARDINAL HEATING & A/C INC, KIRKLAND AVE, KIRKLAND, WA	$ 250	1
CASCADE SATELLITE & SECURITY, W SR 20, SEDRO WOOLLEY, WA	$ 750	2
DEWS ELECTRIC LLC, PO BOX, BURLINGTON, WA	$ 1,000	4
EDWARDS, KELLY, CEDAR ROAD, LAKE STEVENS, WA	$ 50	1
ELECTRIC FURNACE CENTER INC, PO BOX, SNOHOMISH, WA	$ 250	1
EVERGREEN ELECTRICAL SRVCS INC, 60TH AVE WEST, EDMONDS, WA	$ 250	1
EVERSON, STEVE, 44TH AVE SE, SNOHOMISH, WA	$ 50	1
FUEL SYSTEMS ELECTRIC INC, SEATTLE HILL RD, SNOHOMISH, WA	$ 250	1
GRIFFIN, CHARLIE, ANDREW SATER RD, EVERETT, WA	$ 50	1
HENRY, DON, 123RD AVE NE, LAKE STEVENS, WA	$ 50	1
MARTENS BROS INC, PACIFIC HWY, BELLINGHAM, WA	$ 250	1
NORTHWEST MECHANICAL INC, NE 145TH ST, SHORELINE, WA	$ 250	1
OUR CHURCH MINISTRIES, PO BOX, GRANITE FALLS, WA	$ 250	1
PHILLIPS & SON ELECTRIC INC, PO BOX, FALL CITY, WA	$ 1,826	22
POTELCO INC, 8TH ST E, SUMNER, WA	$ 250	1
SAFFOLD, HANK, 191ST ST SW, EDMONDS, WA	$ 50	1
SEAHURST ELECTRIC INC, SMITH AVE, EVERETT, WA	$ 2,000	1
SIGN FACTORY INC, THE, 8TH ST, KIRKLAND, WA	$ 250	1
TROWBRIDGE, DAVID, GYLANY WAY, GREENBANK, WA	$ 50	1
Region 2 – King County		
ADVANCED HEATING & COOLING INC, IVY ROAD, BREMERTON, WA	$ 250	1
ADVANCED WIRING SYSTEMS CORP., SANDY HOOK RD NE, POULSBO, WA	$ 250	1
ARONSON SECURITY GROUP INC, DEXTER AVE N, SEATTLE, WA	$ 1,000	1

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BAYE HEATING & AIR COND INC, PO BOX, BELLEVUE, WA	$ 250	1
BLACK HILLS INC, 85TH AVE SE A, OLYMPIA, WA	$ 250	1
CARLSON SIGN CO, P O BOX, BEND, OR	$ 250	1
DIGITEC SECURITY SERVICES, 165TH ST CT E, PUYALLUP, WA	$ 250	1
DUC THUAN JEWELRY, EAST VALLEY HWY, KENT, WA	$ 250	1
FURNACE DOCTORS, 177 PL SW, LYNNWOOD, WA	$ 250	1
GIESE, D JAY, WAX ROAD, COVINGTON, WA	$ 250	1
HILLS BROTHERS ELECT CNTRS INC, SE 271ST PL, MAPLE VALLEY, WA	$ 250	1
HUNG KY ASIA MARKET, EAST VALLEY HWY S, KENT, WA	$ 250	1
HUNT, PAUL, PO BOX, PUYALLUP, WA	$ 50	1
KIRBY ELECTRIC INC, B ST NW, AUBURN, WA	$ 250	1
LE, XUAN, 3RD AVE S, SEATTLE, WA	$ 250	1
MATRIX HOME THEATRE INC, 130TH AVE SE, KENT, WA	$ 250	1
NEON SIGN SYSTEMS INC, URSULA PL S, SEATTLE, WA	$ 1,000	1
O'BRIEN COMMUNICATIONS, SIMONDS RD NE, KENMORE, WA	$ 250	1
OLYMPIC MECHANICAL INC, 66TH AVE W, MOUNTLAKE TERRAC, WA	$ 250	1
PACIFIC RACEWAYS, 144TH AVE SE, KENT, WA	$ 250	1
S & H ELECTRIC INC, 22ND AVE SE, OLYMPIA, WA	$ 250	1
UNIVERSAL REFRIGERATION INC, PO BOX, AUBURN, WA	$ 250	1
WASHINGTON ALARM INC, S JACKSON, SEATTLE, WA	$ 1,000	1
Region 3 – Kitsap & Olympic Peninsulas		
CHEN, (JOHN) GUO ZHANG, PO BOX, FORKS, WA	$ 250	1
COCHRAN INC, PO BOX, SEATTLE, WA	$ 250	1
INDUSTRIAL ELECTR SPEC INC, OHIO ST, LONGVIEW, WA	$ 1,500	6
KNOBLAUCH, DONALD, RIVERSIDE RD E, SUMNER, WA	$ 250	1
MAXIMUM ELECTRIC INC, 265TH AVE SE, RAVENSDALE, WA	$ 250	1
REGAN, MICHAEL, W HORTON, PORT HADLOCK, WA	$ 500	2
SIGN SOLUTIONS INC, PO BOX, LACEY, WA	$ 250	1
SOUTHERN PRIDE, FLORA ST, PORT HADLOCK, WA	$ 250	1
Region 4 – SW Washington		
CAPITAL ELECTRIC INC, PO BOX, OLYMPIA, WA	$ 250	1
CAPITAL SHEET METAL INC, PO BOX, LACEY, WA	$ 2,000	1
DUNRITE MECHANICAL LLC, NW 25TH PLACE, BATTLE GROUND, WA	$ 250	1
E C COMPANY, PO BOX, PORTLAND, OR	$ 500	1
LEE, ALLEN, SR 409, CATHLAMET, WA	$ 50	1
NAYDEN HEATING & A/C INC, NE 95TH ST, VANCOUVER, WA	$ 250	1
ONALASKA ELECTRIC, PO BOX, ONALASKA, WA	$ 250	1
UNIQUE DESIGNS INC, NE 100TH ST, VANCOUVER, WA	$ 250	1
VITAL SIGNS ELECTRICAL INC, NE 10TH AVE, VANCOUVER, WA	$ 250	1
Region 5 – Central Washington		
AKLAND PUMP/IRRIGATION CO INC, FRUITVALE BLVD, YAKIMA, WA	$ 250	1
ERICKSON ELECTRIC, PO BOX, BREWSTER, WA	$ 250	1
SONITROL OF SPOKANE INC, E TRENT, SPOKANE, WA	$ 250	1
VANCE ELECTRIC, PO BOX, YAKIMA, WA	$ 250	1
Region 6 – Eastern Washington		
RIVERSDALE BUILDERS LLC, ELK-CHATTAROY, ELK, WA	$ 250	1
TRI STATE SIGN CO INC, N ALTAMONT, SPOKANE, WA	$ 250	1
WARNER CONST, DRISKILL RD, NEWPORT, WA	$ 250	1

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 7 No. 2** **February 2004**

SAFES – Strategic Action For Electrical Safety

The SAFES – Strategic Action For Electrical Safety team will soon be coming to an area near you.

The department's new SAFES team will be focusing on reducing the effects of the underground economy and increasing the general public's awareness about the dangers of electricity and the importance of using qualified licensed electrical contractors to do electrical work in the coming months. SAFES will operate as a team across the state and coordinating with local inspectors and city jurisdictions to achieve the maximum effectiveness.

The team will be made up of staff that will focus on the main concerns our customers have with the underground economy (i.e. unlicensed electrical contractors, uncertified electricians, and those who fail to obtain required electrical permits). SAFES will also discover and make referrals to the department's other programs for violations of the general contracting, industrial insurance, and jobsite safety laws. In addition, SAFES will outreach to entities that are in violation of the electrical laws but have an opportunity to become compliant without civil penalty (i.e. open window period for certain specialties available until July 2004 – see the August 2003 *Electrical Currents*).

At the conclusion of the SAFES project, the team will debrief with all jurisdictions to detail the actions and results of the team. The program's ability to locate and address those people in the underground economy will be improved as a result of the work of the SAFES team. Insight will be gained on how to most effectively interact with customers and the underground economy to promote electrical safety and compliance with the electrical laws.

Contractors And Administrators! Inspection Requests Must Be Timely

Each electrical administrator (or master electrician) assigned to an electrical contracting firm must ensure all inspections are requested as required in the WAC rules. Failure to comply with this requirement makes the contractor and administrator/master electrician subject to citation and civil penalties.
WAC 296-46B-900(10) states: *"Requests for inspections must be made no later than three business days after completion of the electrical/telecommunications installation or one business day after any part of the installation has been energized, whichever occurs first."*

Requirements From Building Codes That Contractors And Electricians Need To Know

On July 1, 2004 the International Building Code (IBC) and the International Residential Code (IRC-except chapters 11 and 25 through 42) will be adopted in Washington. There are specific requirements in these codes that directly affect the work done by electrical contractors and electricians. We need to be aware of installation deficiencies that do not specifically violate the NEC electrical requirements, but will have to be repaired before building inspectors can complete their inspections.

Any demolition and subsequent repair of approved electrical work needs an electrical re-inspection. We hope this information helps you avoid this additional expense and delay and "get it right the first time." The following are shortened summaries of the referenced articles. **Some are changes from familiar past practices under the previously enforced Uniform Building Code (UBC).**

- **IRC R303.6 Stairway illumination.** Interior stairways must be provided with an artificial light source providing not less than 1 foot-candle measured at the center of treads and landings and located in the immediate vicinity of each landing. Exterior stairways must have an artificial light source located in the immediate vicinity of the top landing. Exception: An artificial light source is not required at the top and bottom landing if one is provided directly over each stairway section.

- **IRC R303.6.1 Light activation.** The control for activation of the required stairway lighting must be accessible at the top and bottom of each stairway without traversing any steps. The

illumination of exterior stairways must be controlled from inside the dwelling unit. Exception: Lights that are continuously illuminated or automatically controlled.

- **IRC R309.2 Separation required.** The garage must be separated from the residence and its attic area by not less than $^{1}/_{2}$-inch gypsum board. Garages beneath habitable rooms must be separated from all habitable rooms above by not less than $^{5}/_{8}$-inch Type X gypsum board or equivalent. Electricians should check with builders to verify designed wall finishes and adjust box mounting depth and mud-rings appropriately.

- **IRC R317.3.2 Membrane penetrations.** Where walls are required to have a minimum 1-hour fire resistance rating (typically common walls between duplexes and townhouses), penetrations caused by **outlet boxes on opposite sides of the wall** must be installed such that the required fire resistance will not be reduced. Listed steel boxes that do not exceed 16 square inches in area must be separated by a horizontal distance of not less than 24 inches, solid fire blocking with approved materials, both protected by listed putty pads, or other listed materials and methods. Listed boxes of other materials must be installed as tested as an approved fire-resistance-rated assembly. Every manufacturer has distinct installation requirements for their fire-rated assembly, in addition to the minimum separation requirements for steel boxes above.

- **IRC R502.8.1, R602.6, and R802.7.1 Drilling and notching-Sawn lumber.** Notches in solid lumber joists, rafters, and beams must not exceed $^{1}/_{6}$ of the depth of the member, must not be longer than $^{1}/_{3}$ of the depth of the member and must not be located in the middle $^{1}/_{3}$ of the span. Notches at the ends must not exceed $^{1}/_{4}$ the depth of the member. The tension side of members 4 inches or greater in nominal thickness must not be notched except at the ends. The diameter of holes bored or cut into members must not exceed $^{1}/_{3}$ the depth of the member and must not be closer than 2 inches to the top or bottom, or closer than 2 inches to any other hole or notch.

  In addition to the requirements of NEC 300.4, holes in studs cannot exceed 40 percent of a single stud width in diameter with the edge of the hole no closer than $^{5}/_{8}$-inch from the edge of the stud. Except the diameter may be increased to 60 percent if the studs are doubled and no more than two successive studs are bored.

- **IRC R502.8.1 & R802.7.2 Engineered wood products.** Cuts, notches and holes bored in trusses, laminated veneer lumber, glue-laminated members, or I-trusses and joists, are not permitted unless the effects of such penetrations are specifically considered in the design of the member.

- **IRC M1307.1 Appliance installation-General.** Installation of appliances shall conform to the conditions of their listing and label and the manufacturer's installation instructions. <u>The manufacturer's operating and installation instructions must remain attached to the appliance</u>.

● When Must A Grounding Electrode System Be Updated?

Recently electrical inspectors have reported service alterations where the panel is replaced and re-connected to the existing grounding electrode system. When a new service is installed, the installer is required to verify that the existing grounding electrode system (GEC) complies with the present code. This includes proper sizing of the GEC, connection to all available electrodes, and verification that made electrodes meet the resistance requirements of NEC 250.56.

● Electrical Question of the Month

This Month's Question: Electrical maintenance of a household electric potable water heater in a dwelling unit is within the scope of work of all of the following electrical specialties, except: **A)** 02-residential, **B)** 06A-HVAC/refrigeration, **C)** 07-nonresidential maintenance, **D)** 07D-appliance repair.

Last Month's Question: In clothes closets, recessed incandescent lighting fixtures with a completely enclosed lamp shall be permitted to be installed in the wall or on the ceiling, provided there is a minimum clearance of _____ inches between the fixture and the nearest point of a storage space. **A)** 6, **B)** 12, **C)**18, **D)** 24. The answer is **A)** [NEC 410.8(D)(3)]

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Washington State Department of Labor and

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 7 No. 1** January 2004

NEW ELECTRICAL PROGRAM WEB SITE ADDRESS

The electrical program web site address has changed. The improved, user-friendly site is available at: ***www.lni.wa.gov/TradesLicensing/electrical***.

Electrical Board Recruitment

The Electrical Advisory Board has fourteen (14) members appointed by the Governor for a regular 4-year term. Representation on the Board includes three electrical contractors, one electrical utility representative, one manufacturer, three certified electricians, one combination electrical/RCDD certified engineer, one general public member, one telecommunications worker, one telecommunications contractor, one telecommunications service provider and one building official (non-voting).

Two Electrical Board appointments are scheduled to expire in July 2004. One position represents electrical utilities and one represents building officials (non-voting). Incumbent members may apply for reappointment to their positions, and new, interested, qualified persons may also apply for these positions.

An *Application for Gubernatorial Appointment to a Board or Commission* form is necessary. Requests for copies of the application and any questions may be directed to Angie Wharton at (360) 902-5259.

Applicants must submit a letter of interest, completed application form (above), and current resume to the Chief Electrical Inspector, PO Box 44460, Olympia, WA 98504-4460, by no later than April 1, 2004.

Attention Specialty Electrical Contractors And Electricians

The open window opportunity for assigning a temporary administrator for the following specialties will close July 31, 2004. Please refer to WAC 296-46B-930(2) and Table 930-1 for detailed information.

- Domestic well (03A)
- HVAC/refrigeration-restricted (New – 06B)
- Nonresidential maintenance (07)
- Nonresidential lighting maintenance (07A)
- Residential maintenance (07B)
- Restricted nonresidential maintenance (New - (07C)
- Appliance repair (New – 07D)
- Equipment repair (New – 07E)
- Door, gate and similar systems (10)

All the above certification categories are also open to individuals who wish to apply any previous work experience gained toward electrical training credit. The HVAC/refrigeration (06A) category is also open for individuals to count previous experience but is not open for assigning a temporary administrator. This window of opportunity also closes on July 31, 2004. For detailed information regarding applying previous work experience toward certification please refer to WAC 296-46B-950 and Table 950-1.

New Requirements For Continuing Education

To be eligible for renewal of an administrator certificate, master electrician, or electrician certificate of competency, an individual must have completed at least eight hours of approved continuing education for each year of the prior certification period. At least eight hours of the total required continuing education must be on the currently adopted National Electrical Code changes.

Beginning January 1, 2005, four hours of the required continuing education must be on the currently adopted chapter 19.28 RCW and its related WAC(s).

Those individuals who currently have certification that expires after December 31, 2004 are encouraged to plan ahead for the new requirement for RCW and WAC update training. Remember, the required NEC, WAC, and RCW training must be on the version in effect at the time of renewal.

All currently approved continuing education courses are available on the Electrical Program Web site at ***www.lni.wa.gov/TradesLicensing/electrical***.

● 4:00 PM Inspection Request Cut-Off.

Inspection requests made, by phone or fax, after 4:00 PM may not be processed in time to be included in the inspectors work for the following business day. To assure an inspection request will be processed in time phone or fax your request prior to 4:00 PM. Contractors may use the online Electrical Inspection Request Service (EIRS). EIRS provides 24-hour electronic access to active permits and allows inspection requests made prior to midnight to be included in an inspector's workload for the following day. See the electrical Web site for details on how to use this service.

● Are Auto Body Shops Commercial Garages?

Recently there has been some question as to whether automobile body shops are commercial garages and subject to the requirements of NEC 511.

NFPA 30A is the National Fire Protection Association "Code For Motor Fuel Dispensing Facilities And Repair Garages" and defines a major repair garage as "*a building or portions of a building where major repairs, such as engine overhauls, painting, body and fender work, and repairs that require draining of the motor vehicle fuel tank are performed on motor vehicles, including associated floor space used for offices, parking, or showrooms.*

Auto body shops are commercial garages and subject to the requirements of NEC 511. Additional requirements, for areas where paint spraying is done, are found in NEC 516.

● Who May Remove Electrical Wiring And Equipment?

Un-trained workers are typically unaware of the potential electrical hazards they often leave behind when disconnecting or abandoning electrical wiring and equipment. Until a licensed electrical contractor properly disconnects and properly terminates circuits being abandoned or demolished, all work on the electrical circuit(s) is considered electrical maintenance and appropriate licenses and certificates are required from anyone working on the circuit(s).

RCW 19.28.041 states: "*It is unlawful for any person, firm, partnership, corporation, or other entity to engage in, conduct, or carry on the business of installing or maintaining wires or equipment to convey electric current, or installing or maintaining equipment to be operated by electric current as it pertains to the electrical industry, without having an unrevoked, unsuspended, and unexpired electrical contractor license, issued by the department in accordance with this chapter.*"

Once the circuit(s) is properly disconnected, ensuring isolation from all premises wiring, non-electrical contractors and individuals may then remove the de-energized conductors or equipment. Non-electrical contractors or individuals are not allowed to perform any type of work inside energized electrical enclosures (e.g. panels, switches, junction boxes, etc.).

● Electrical Question of the Month

This Month's Question: In clothes closets, recessed incandescent lighting fixtures with a completely enclosed lamp shall be permitted to be installed in the wall or on the ceiling, provided there is a minimum clearance of _____ inches between the fixture and the nearest point of a storage space. **A)** 6, **B)** 12, **C)**18, **D)** 24.

Last Month's Question: Electric heating appliances employing resistance-type heating elements rated more than _____ amperes shall have the heating elements subdivided. **A)** 60, **B)** 50, **C)** 48 **D)** 35.
The answer is: C) [NEC 424.22(B)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 6 No. 12** **December 2003**

Late Administrator and Electrician Renewals

Each month we receive several letters to the Chief requesting relief from additional renewal fees or re-testing requirements for late renewals of electrician/administrator certificates. The governing certificate statutes are very clear; renew prior to your expiration date. The request will be automatically denied.

The legislature did not grant the department authority to waive this requirement and there is no avenue to appeal a decision to deny the request. If you are late and within 90 days of your expiration date, you must pay an additional late renewal fee. If more than 90 days have past, you must re-test to obtain a certificate.

To assist you with renewals, the department has printed change of address reminders on the back of your wallet certificate and sends a courtesy renewal notice to your last address of record 6 weeks prior to your renewal date. We have also made renewal easier. You can renew over the Internet with a credit card, through the mail, or at any of the 22 L&I service locations.

No slab or ditch cover without inspection.

Electrical contractors and installers have been requesting slab and ditch cover approval without inspection. Cover approval cannot be granted except in emergency situations. Failure to call for an inspection in a timely fashion does not constitute an emergency. The local inspection supervisor must be made aware of and approve all emergency requests for slab and ditch cover.

Compliance Training For City Of Seattle Electrical Inspectors

By request of the City of Seattle Mayor, the City electrical program has joined together with Labor & Industries to ensure safer installations and a more competitive marketplace for contractors through stringently enforcing licensing compliance. The City of Seattle inspectors have received the first round of training in licensing compliance activities. The City inspectors will be checking licenses and credentials on electrical installations and making referrals to the department when non-compliance activity is found. Qualified trained workers will inherently produce a safer installation. With better compliance enforcement, contractors bidding jobs in the City can count on competing in an equitable competitive environment. Seattle area contractors can expect to see department and city inspectors making joint jobsite visits as a continuation of the compliance training. We hope more local jurisdictions will join in working with the department in improving compliance efforts and improving the competitive advantage for legal contracting firms statewide.

How important is grounding?

Las Vegas, Nevada – A tourist was electrocuted near a Las Vegas Strip casino during a weekend rainstorm. The tourist was walking across a median near the Treasure Island hotel-casino when she stepped on a wet traffic signal wiring box and collapsed. The victim was not wearing shoes. A worn wire inside the traffic box likely energized the cover of the box that was not effectively grounded. The victim was pronounced dead at a Las Vegas hospital.

Temporary Employment Firms – Requirements Under The Electrical Law

At first glance labor pools who provide temporary electrical workers appear to be electrical contractors, however that is not always the case.

Temporary employment firms that dispatch electricians to licensed electrical contractors. The temporary employment firm is the employer of the individual for purposes other than chapter 19.28 RCW. The electrical contractor is the employer for the purposes of chapter 19.28 RCW (e.g. layout of

work, performance of work, supervision, etc.). The electrical contractor is responsible for the individual's work and must ensure the individual meets all requirements of chapter 19.28 RCW.

Temporary employment firms that dispatch electricians to entities other than electrical contractors. Any firm that supplies electricians to entities other than licensed electrical contractors is acting as an electrical contractor. The firm must be a licensed electrical contractor meeting all the provisions of chapter 19.28 RCW. This includes: having a full-time electrical administrator or master electrician, obtaining permits/inspections, using only certified electricians, and otherwise meeting all the requirements of chapter 19.28 RCW for electrical contractors. The firm is the employer for the purposes of chapter 19.28 RCW (e.g. layout of work, performance of work, supervision, etc.). The firm is responsible for the individual's work and must ensure the individual from the temporary employment firm meets all requirements of chapter 19.28 RCW.

● When Do Well Drillers And Pump Installers Need To Be Electrical Contractors?

The 03A-Domestic Well specialty was created in 1998 at the request of the industry stakeholders. The department has agreed that well drilling, placement of a well pump, installation of conductors associated with the pump, and necessary water piping in the well casing is construction activity best regulated under chapter 18.27 RCW, Registration of Contractors. A registered contractor can perform this installation without becoming an electrical contractor if the electrical conductors supplying the pump and the wiring going down the well casing is left disconnected at the top of the wellhead.

A properly licensed electrical contractor must make the final electrical connection of those conductors at the top of the wellhead. An electrical contractor license and electrician certification is required to make the final connection and all other electrical work including electrical maintenance of the pump and all accessory equipment, wiring, conduit, etc. for pumps being installed new, maintained, or replaced.

A driller or pump installer registered under Chapter 18.27 RCW may temporarily connect a pump for testing from a portable generator with cord and plug output. These generators are typically 10 kw and smaller. Larger scale generating equipment typically involves electrical distribution and feeders, circuit hard wiring, overcurrent protection, and grounding safety issues.

Registered general contractors may advertise, bid, or subcontract electrical work that involves the connection of equipment they are allowed to install under their contractor registration; however, they cannot perform the electrical installation.

● Electrical Exams

LaserGrade will have newly revised exams available on January 1, 2004. The new examinations will be based on the current chapter 19.28 RCW and WAC 296-46B. These documents are posted on the Electrical Program website. See the November 2003 *Electrical Currents* for additional information.

● Electrical Question of the Month

This Month's Question: Electric heating appliances employing resistance-type heating elements rated more than _____ amperes shall have the heating elements subdivided. **A)** 60 **B)** 50 **C)** 48 **D)** 35

Last Month's Question: You are asked to investigate the failure of the electric radiant ceiling heating cable system in the living room of an apartment in an existing building. When you open the junction box for the line-voltage thermostat controlling the area, you see that the nonheating leads of the heating cable are blue. This heating cable is designed for a _____ volt system. **A)** 120, **B)** 208, **C)** 240, **D)** 277. The answer is: B) [NEC 424.35(2)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 6 No. 11** **November 2003**

Transition To New Electrical Examinations Scheduled For January 1, 2004

The revisions to chapter 19.28 RCW from the 2003 Legislative session have been completed and are now available online at: ***http://www.leg.wa.gov/RCW/***. We expect to have new examinations, based on currently adopted regulations, available from LaserGrade starting January 1, 2004.

Master electrician examinations will be available for the first time on January 1, 2004. The new master electrician and electrical administrator examinations are divided into sections. All examinations include a "Code" and "Administration and Theory" section. The new 01 General and 02 Residential master electrician and electrical administrator examinations include a third section, "Major Calculations."

To be fair, candidates who have passed a section(s) of an old examination but have not completed the entire examination (i.e. passed all sections within one year of beginning the examination) prior to January 1, 2004 may choose to continue with the old examination sections for the time period allowed in WAC 296-46B-960(3) (i.e. one year after beginning the exam).

All new examinations will be based on currently adopted regulations. New reference materials include the 2002 National Electrical Code (NEC), the April 2003 (red cover) printing of WAC 296-046B, and the new chapter 19.28 RCW.

Proposed Examination Extension For New Specialty "Open Window" Temporary Electricians And Administrators

The department is proposing a change to WAC 296-46B Tables 930-1 and 950-1 to allow "open window" temporary electrician and electrical administrator candidates for new specialties, who apply prior to January 1, 2004, appropriate time to pass their examination. The proposed change will allow all candidates to have at least the amount of time allowed in the current WAC (i.e. 12-months for administrators and 24-months for temporary specialty electricians) to complete their examinations. The department is proposing this change because the examinations for these specialties will not be available until January 1, 2004.

New specialties include 06B-HVAC/R-Restricted, 07C-Restricted Nonresidential Maintenance, 07D-Appliance Repair, and 07E-Equipment Repair.

Unlisted Equipment Will Not Be Permitted To Operate Without Special Approval

In order to meet the minimum electrical safety standards for installations, all materials, devices, appliances, and equipment, not exempted in chapter 19.28 RCW, must conform to appropriate standards recognized by the department, be listed, or field evaluated. Other than as allowed in WAC 296-46B-030(3), equipment must not be energized until such standards are met unless specific permission has been granted by the chief electrical inspector. Approval will be granted through the variance process.

Mobile/Manufactured Home Electrical Alterations

Mobile/manufactured homes must meet applicable standards adopted by the department in WAC 296-150M. Any electrical alteration made in or on these homes must be inspected and approved by a factory assembled structure (FAS) inspector. Department electrical inspectors will not approve a service and/or feeder to a mobile/manufactured home that has been altered unless evidence of FAS inspection and approval is available.

SSB 5434 And Nonprofit Corporations

Senate Substitute Bill (SSB) 5434 passed in the 2003 Legislative Session allows an electrical contractor licensing exemption for a nonprofit corporation under 26 U.S.C. Sec. 501 (c)(3). The bill also allows the

nonprofit corporation to use appropriately certified electricians and supervised trainees to perform electrical installation, repair, or maintenance on the corporation's facilities. Volunteer electricians and trainees cannot receive any type of compensation for the work. The total value of the electrical work (e.g. design, labor, materials, equipment, permits, etc.) cannot exceed $30,000. Although exempt from electrical contractor licensing, the nonprofit corporation must obtain the proper electrical work permits and ensure they follow all electrician certification and trainee supervision ratio requirements of chapter 19.28 RCW. Any group attempting to purchase a permit under this new exemption should be prepared to supply a copy of the "qualifying" letter from the Internal Revenue Service (IRS) granting the entity the right to claim the 501(c)(3) non-profit status.

According to federal requirements, **U.S.C. Sec. 501 (c)(3)** nonprofit corporations include corporations, and any community chest, fund, or foundation organized and operated exclusively for religious, charitable, scientific, testing for public safety, literary, or educational purposes, or to foster national or international amateur sports competition, or for the prevention of cruelty to children or animals. None of the corporation's net earnings may benefit any private shareholder or individual. No activities may carry on propaganda, influence legislation, or intervene in any political campaigns for public office.

The **statute did not** grant electrical contractor licensing exemption to **U.S.C. Sec. 501(c)(4)** entities (e.g. civic leagues, social welfare organizations, and local associations of employees with earnings devoted exclusively to charitable, educational, or recreational purposes).

● Flat Conductor Speaker Wire

Limited Energy stakeholders made us aware of the introduction of a new "flat wire" low voltage speaker cable product intended for installation (retrofitting) on the surfaces of existing buildings. The product is intended to be covered by wallpaper or drywall taping compound and paint. No electrical testing laboratory approved in Washington provides a listing for this type of "flat wire" cable. All cabling installed in Washington must be listed or field evaluated. Installations using unlisted or field evaluated materials will not be approved.

● Disconnects Ahead Of Metering Equipment

Many electrical utilities require an accessible disconnect ahead of 200 amp or less, three-phase, 277/480 line voltage meter sockets. This disconnecting means is not a requirement of the National Electrical Code (NEC). The disconnect serves as an additional safety device for utility personnel needing to maintain and work in the metering equipment.

2002 NEC 230.82 (2) has been modified to include disconnect switches installed ahead of a meter as "Equipment Connected to the Supply Side of Service Disconnect."

The department will accept disconnect switches ahead of a meter without integral or immediately adjacent overcurrent protection and will allow the enclosures to be grounded with the system grounded circuit conductor per NEC 250.142(A)(1). In the past, the department has required disconnect switches to be installed as a service disconnecting means meeting the NEC requirements for overcurrent protection, main bonding jumper installation, and grounding electrode conductor termination.

● Electrical Question of the Month

This Month's Question: You are asked to investigate the failure of the electric radiant ceiling heating cable system in the living room of an apartment in an existing building. When you open the junction box for the line-voltage thermostat controlling the area, you see that the nonheating leads of the heating cable are blue. This heating cable is designed for a _____ volt system. **A)** 120, **B)** 208, **C)** 240, **D)** 277

Last Month's Question: Built-in dishwashers and trash compactors shall be permitted to be cord-and-plug connected with a flexible cord identified as suitable for the purpose in the installation instructions of the appliance manufacturer where the length of the cord is _____. **A)** less than 24 inches, **B)** less than 36 inches, **C)** 36 to 48 inches, **D)** as short as practicable. **The answer is: C)** [NEC 422.16(B)(2)(2)].

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 6 No. 10** **October 2003**

● New WAC Provisions For Approval Of "Industrial Utilization Equipment"

Pictured is Chief Electrical Inspector, Ron Fuller (on right) with Bruce Gibson, Executive Vice President of Fatigue Technology, Inc. (FTI) in Tukwila at the first application of the new Labor and Industries approval decals for industrial utilization equipment. FTI is a supplier to Boeing and other international aerospace industry customers and has operations in Germany, France, and England.

Our electrical laws in Washington (chapter 19.28 RCW) require that all wiring, appliances, devices, and equipment be inspected and "*shall be of a type that conforms to applicable standards* ***or*** *be indicated as acceptable by the established standards of any electrical product testing laboratory which is accredited by the department*." The new rule, WAC 296-46B-030, applies specifically to equipment used in a manufacturing process only and states in part, "***Industrial utilization equipment*** *means equipment directly used in a manufacturing process in a food processing or industrial plant, in particular the processing, treatment, moving, or packaging of a material*."

For specific equipment referred to in the National Electrical Code (NEC), typical consumer products like wire, receptacles, switches, panelboards, luminaires, and appliances, the Code states, "*It is the intent of this Code that factory-installed internal wiring or the construction of equipment need not be inspected at the time of installation of the equipment, except to detect alterations or damage, if the equipment has been listed by a qualified electrical testing laboratory…*" The NEC also makes it clear that the requirement for **approval** is "*acceptable to the authority having jurisdiction*."

We surveyed other states during the WAC rules development process. Washington is not the only state that requires third-party safety evaluation of electrical equipment by accredited electrical products testing laboratories. In fact, most states that regulate electrical work require this type of product safety assessment before the equipment can be approved. All of our neighboring states and the states in our reciprocal electrical licensing agreements (Oregon, Idaho, Montana, Wyoming, Colorado, Alaska, Utah, Nebraska, Minnesota, North Dakota, South Dakota, and Massachusetts) enforce third-party evaluation requirements similar to ours.

Some states will only accept listing and labeling of equipment when it leaves the factory. We are among the states that will accept "field evaluation" of unlisted equipment for conformance to appropriate national electrical product safety standards by accredited testing laboratories.

Washington is unique in developing rules that establish a process to allow an industrial utilization equipment owner and the equipment manufacturer to obtain approval by demonstrating their equipment conforms to national or international safety standards. Recent testimony (9-19-03) before the Senate Economic Development Committee by Kevin Dooley, Fatigue Technology's Vice President of Finance, commended the department for its innovative cooperation with business in this specific area.

● Electrical Board Telecommunications Contractor Position Open

The **telecommunications contractor Electrical Board member position is currently vacant** following the relocation to another state of the current appointee. The department is currently seeking an interested and qualified person to fill this vacancy.

An *Application for Gubernatorial Appointment to a Board or Commission* form is necessary. Requests for copies of the application and any questions may be directed to Angie Wharton at (360) 902-5259 or Rhonnda Jenkins at (360) 902-5572. Applicants should submit a letter of interest, completed application form, and current resume to the office of the Chief Electrical Inspector, PO Box 44460, Olympia, WA 98504-4460, by **no later than November 1, 2003**.

● DEADLINE! Training School Programs Eligible for Retroactive Approval

Training school programs must be approved **before** a graduate requests credit for work experience hours toward electrician certification. **Until December 31, 2003,** existing electrical training programs may apply for **retroactive approval** of their program to determine the number of hours that may be credited for program graduates. If the specialty electrical training program applies before December 31st and is approved, students that successfully completed the program after January 1, 2000 may receive work experience credit. If you are an electrical specialty trainee affected by this change, contact the school you attended to see if they have submitted the training program to the department for approval.

● DEADLINE! Equipment Repair Specialty "Grandfathering" Opportunity

The opportunity to "grandfather" previous equipment repair experience and receive 07E equipment repair specialty electrician certification without examination expires November 30, 2003. All individuals who wish to receive 07E certification without testing must complete an **Application for Equipment Repair Specialty Electrician Certification Without Examination** and pay the appropriate certification fee **before December 1, 2003.**

For a more detailed explanation of this opportunity reference the newsletter article entitled "*"Grandfathering" Equipment Repair Certification*" published in the July 2003 Electrical Currents.

● DEADLINE! 07B Certification Conversion to Appliance Repair Specialty

When the effort to bring the appliance repair industry into compliance with the law was initiated, the only appropriate certification choices were 07-Nonresidential Maintenance and 07B-Residential Maintenance. Statute changes in 2002 enabled the creation of the 07D-Appliance Repair specialty. Many individuals that applied early and passed the 07B examination(s) would have opted for the more appropriate 07D certification if it existed at the time. **Individuals who work in the appliance repair industry may on or before December 31, 2003 convert their 07B certificate to the 07D specialty without exam**.

For a more detailed explanation of this opportunity reference the newsletter article entitled "*ATTENTION! APPLIANCE REPAIR PERSONS WITH 07B CERTIFICATION*" published in the July 2003 Electrical Currents.

● Electrical Question of the Month

This Month's Question: Built-in dishwashers and trash compactors shall be permitted to be cord-and-plug connected with a flexible cord identified as suitable for the purpose in the installation instructions of the appliance manufacturer where the length of the cord is _____. **A)** less than 24 inches, **B)** less than 36 inches, **C)** 36 to 48 inches, **D)** as short as practicable.

Last Month's Question: Disconnecting means, in other than dwelling units, require an identification plate identifying the purpose of the disconnect and the _____of the circuit source panelboard that supplies the disconnect. **A)** Voltage, **B)** Amperage, **C)** identification designator, **D)** temperature limitations. **The answer is: C)** [WAC 296-46B-110 022(3)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 6 No. 9** **September 2003**

Perfect Exam Scores

Since LaserGrade has been delivering the new Washington electrician examinations in a computer-based format, there have been five individuals that scored 100% on their journeyman or specialty electrician examination. These individuals deserve the respect of their peers in the electrical industry. We would like to acknowledge this achievement by printing their names in this newsletter for all of our stakeholders to see. If you know these individuals, please give them your congratulations.

07-Nonresidential Maintenance	2/24/2002	**Robert Jennings**, Roy, WA
7B-Residential Maintenance	5/20/2002	**Kris Goelzenleuchter**, Centralia WA
6A-HVAC/refrigeration	6/20/2002	**Duane Tufte**, Federal Way, WA
01-Journeyman Electrician	9/28/2002	**Trevor Hewitt**, Ferndale, WA
7B-Residential Maintenance	5/5/2003	**Nathaniel Rinker**, Kelso, WA

Avoid Costly Corrections—Make Sure Your Code Books (2002 NEC) Are Accurate

Our inspectors recently encountered an installation where the contractor used nonmetallic-sheathed cable (Type NM) on 120/240-volt, 3-wire, single-phase, dwelling unit feeders at the increased ampacity that is detailed in NEC 310.15(B)(6). In the first printing of the 2002 NEC in Table 310.15(B)(6) this may seem to be an acceptable installation, however, a correction was properly written and posted. The permission to use this higher ampacity rating only applies to conductor types RHH, RHW, RHW-2, THHN, THHW, THW, THW-2, THWN, THWN-2, XHHW, XHHW-2, SE, USE, and USE-2. (NEC 334.80 places additional restrictions on the ampacity of conductors in NM cables as well.)

In a document as complex as the NEC nearly every printing has errata associated with the final production run. The National Fire Protection Association (NFPA) added the above conductor limitations to the heading of Table 310.15(B)(6) as part of **43 corrections** (errata) made to the first printing of the 2002 NEC. Subsequent errata have been issued for the 2002 NEC second printing and the 2002 NEC Handbook. The details of the errata are available to the public at: ***www.nfpa.org/Codes/tias_errata.asp***.

This web page also includes all Temporary Interim Amendments (TIA's) that are effective between different editions of the standard. When you search their Web site, remember that the official NFPA document title for the National Electrical Code is **NFPA 70**.

Electrical Compliance Activity—Revocation Of Administrator Certification

The owner of an electrical contracting firm recently had his (01) journeyman and (01) general administrator certificates revoked and fines and court costs collected for misrepresenting his prior electrical training. The falsified information allowed the business owner to illegally obtain (01) journeyman electrician certification. A department audit revealed his contracting firm was licensed only as a residential specialty electrical contractor and thus excluded from commercial/industrial installations. In addition, the firm did not employ any certified journeyman electricians to provide the required supervision for the claimed training experience.

The department sought revocation of the owner's administrator certificate, in addition to the illegally obtained journeyman certificate, because the administrator assigned to an electrical contracting firm is the responsible party to ensure all code and technical standards and state laws and rules are followed. The electrical administrator (or master electrician) is held accountable to the highest standards of the electrical industry. If you have assumed administrative responsibility for an electrical firm do not take it lightly.

Expedited Plan Review?

In order ensure that all plan submittals are processed in a fair, equitable manner, plans are assigned to the examiners in the order that they are received. The department has no process to "expedite" plans that are not submitted prior to the scheduled construction start with enough lead-time to ensure they are "*…reviewed and approved before the electrical installation or alteration is started.*" as required in WAC 296-46B-010(16).

Even when a submitter is willing to pay for overtime in addition to review fees the department, unlike most businesses, does not have the ability to accept additional fees and translate them directly into employee overtime wages. Our mandatory budget process is different than a typical business. You cannot "buy" your way out of poor planning by the electrical designer and/or facilities owner. Failure to allocate time for the review process may result in construction delays.

Independent Power Producers

Electrical utilities are beginning programs to purchase electrical power from independent power producers (IPP). Two popular alternate sources of electricity are solar photovoltaic systems and wind generation.

RCW 19.28.091(2)(c) and WAC 296-46B-925(18) allow independent power producers exemption when they meet specific criteria. Each IPP must make application to the Chief Electrical Inspector, **prior to beginning the project**, to be recognized as an IPP exempted from the requirements of the RCW 19.28 and WAC 296-46B. Failure to do so may result in non-compliance citations and civil penalties.

Installation of alternate power sources constructed for standby or supplemental onsite use by a utility customer must comply with all requirements set forth in RCW 19.28 and WAC 296-46B for permitting, inspections, licensing, and worker certification.

Low Voltage and Telecommunications Cabling

It has recently come to the department's attention that installers of low voltage and telecommunications system wiring are securing cables using staples that are causing damage to the cables. Performance of certain cables can be compromised by improper installation methods even when damage is not visible.

NEC 110.3(B) requires: "*Listed or labeled equipment shall be installed and used in accordance with any instructions included in the listing or labeling*". The definition of "electrical equipment" found in WAC 296-46B-020(19) includes electrical conductors. Cables must be secured according to the manufacturer's instructions.

WAC 296-46B-300 references Chapter 3 of the NEC for securing telecommunications, power limited, and NEC Class 2 and 3 cables. It also requires that cables "*must be secured in a manner that will not cause damage to the cables*" and allows telecommunications and optical fiber cables to be secured at intervals not to exceed five feet.

In Chapters 7 and 8 of the National Electrical Code repeats a common theme, *"Such cables shall be attached to structural components by straps, staples, hangers, or similar fittings designed and installed so as not to damage the cable. The installation shall also conform with 300.4(D).*

Electrical Question of the Month

This Month's Question: Disconnecting means, in other than dwelling units, require an identification plate identifying the purpose of the disconnect and the _____of the circuit source panelboard that supplies the disconnect. A) Voltage, B) Amperage, C) identification designator, D) temperature limitations

Last Month's Question: When the opening to an outlet, junction, or switch point is less than 8 inches in any dimension, each conductor shall be long enough to extend at least _____ outside the opening of the enclosure. **A)** 3 inches, **B)** 4 inches, **C)** 6 inches, **D)** 8 inches. The answer is: **A)** [NEC 300.14]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 6 No. 8** **August 2003**

Listed EMT Compression Fittings Marked "Raintight"

In March of 2003 Underwriters Laboratories (UL) initiated more stringent UL follow-up requirements for manufacturers listing EMT "raintight" fittings. UL says they want to ensure the fittings consistently maintain their rain-tight integrity. As of April 2003, UL authorized no "raintight" EMT listings.

Electrical manufacturers may use **any approved laboratory** to list their product. Any existing listed EMT fitting identified as "raintight" by a properly accredited Washington testing laboratory is acceptable. The laboratory's label is typically on the smallest unit of packaging. It is the installer's responsibility to provide evidence that the fittings they use are approved for the environment in which they are installed.

Electrical License/Certification & Listing Requirements For Sign Work

We have received requests from our inspectors and contractors for additional clarification on this subject. This article supplements the Electrical Currents August 2002 article titled "Multi-Jurisdictional Equipment?" All previous issues are available at: ***www.lni.wa.gov/scs/electrical/elc.htm***. Other information is also in the scope of work for the (04)-Signs specialty [WAC 296-46B-920(2)(d)].

WAC 296-46B-925(8) says, "*Firms who clean and/or replace lamps in luminaires are not included in the requirements for licensing in chapter 19.28 RCW. This exemption does not apply to electric signs as defined in the NEC.*" Electric signs are **not** luminaires. Electrical contractor licensing and electrician certification is required to replace/clean lamps in electric signs and to engage in the business of changing sign faces in the field, even though the department will not require a permit/inspection for the work.

Electrical licensing/certification is not required while engaging in the business of painting electrical signs or installing a new vinyl sign overlay in the field provided that the sign face does not have to be removed. In the event the sign face is removed, electrical licensing/certification is required. Generally speaking, any time a sign face is required to be opened for maintenance/repair, the firm must be a licensed electrical (01 or 04) contractor and the worker must be a certified electrician (01 or 04). Some plug and cord connected signs may be exempt for the requirements for licensing/certification (see WAC 296-46B-925(9) for details).

All electrical signs must be listed (see WAC 296-46B-600(1) and (7) for details).

Electrical Contractors—Subcontracting Electrical And Other Work

Electrical contractors can only subcontract to other electrical contractors. If the electrical contractor needs **to perform or subcontract the work of any other non-electrical trade**, the electrical contractor must also be a registered general or specialty contractor who meets the requirements of chapter 18.27 RCW.

Electrical contractors who need to perform or subcontract work that is non-electrical should see chapter 18.27 RCW for the general contractor registration requirements. The website for the Contractor Registration Section is: ***www.lni.wa.gov/scs/contractors/howto.htm***.

Publication Of Chapter 19.28 RCW—Electricians and Electrical Installations

Most of the changes in RCW 19.28 made in the 2003 legislative session were effective July 27, 2003. Many of these changes will be implemented immediately while others will need to complete the 2003-2004 WAC revision cycle to allow the department and our stakeholders to establish practical procedures and processes for enforcement. We will not be able to print the changes to the statute from the four successful bills (SHB 1848, ESSB 5713, ESB 5210, and SSB 5434) until the Office of the Code

Reviser completes work on chapter 19.28 RCW. Copies of these bills are available on the Code Reviser's Web site at: ***http://slc.leg.wa.gov/.*** Our estimate of a publication date is late September-October.

● "Open-Window" Opportunities For Specific Specialty Electrician Certification

Individuals with previous appropriate electrical experience may apply their experience towards qualifying for specific specialty electrician examination. The following specialties will be in the "open-window" opportunity:

Revised **03A**-*Domestic Well*
Revised **06A**-*HVAC/refrigeration system*
NEW **06B**-*HVAC/refrigeration system-Restricted*
07-*Nonresidential Maintenance*
07A-*Nonresidential Lighting Maintenance*
07B-*Residential Maintenance*
NEW **07C**-*Restricted Nonresidential Maintenance*
NEW **07D**-*Appliance Repair*
NEW **07E**-*Equipment Repair*
10-*Door, Gate, and Similar Systems*

Individuals with prior experience in one or more of the areas of electrical maintenance or installation above should review details of their scope(s) of work to ensure that they are making the best choice(s) about the applicability of their experience. Candidates for these electrical exams should note that all electricians are examined on the entire scope of work they are allowed to do, not just the specific experience they may have. Scope of work details are in WAC 296-46B-920 available at all L&I field offices and online at: ***www.lni.wa.gov/scs/electrical/29646B.pdf***.

● Reference Materials For Electrical Exams—Electrical Code, State Laws & Rules

Our electrical exams (administrator, journeyman and specialty electrician) will remain based on the 1999 NEC and the July 2001 printing of RCW 19.28, WAC 296-46A, and WAC 296-401B until we print the latest version of the statute (estimated late September-October). **Do not use the currently effective 2002 National Electrical Code or the April 2003 (red cover) printing of WAC 296-46B as reference material until the exams are upgraded. There will be a notification** in the Electrical Currents, electrical listserver and electrical website **prior to implementing the new exams**.

● 2003-2004 WAC Revision Process Update

The deadline for submitting WAC revision proposals was July 21, 2003. No further proposals for this cycle will be accepted for Technical Advisory Committee (TAC) consideration. The TAC will review the proposals in Tumwater on August 26, 2003. The proposed revisions are now available for public review at: ***www.lni.wa.gov/scs/electrical/2003-2004wac/03-04wac.htm*.**

● Arc-Fault Protected Circuits In Studio Apartments

2003 NEC 210.12 requires: "*All branch circuits supplying ... 15/20-amp outlets in dwelling bedrooms to be protected by an arc-fault circuit interrupter listed to provide protection of the entire branch circuit.*" The dictionary defines "bedroom" as "a room intended for sleeping." A studio apartment is a "dwelling unit" (i.e. It has space intended for living and sleeping, and permanent provisions for cooking and sanitation). In a studio sleeping area, outlet circuits must meet the requirement for arc-fault circuit-interrupter protection. This requirement does not extend to rooms in one/two/multifamily dwellings such as living rooms or recreation rooms that are not primarily designed for use as a sleeping room.

● Electrical Question Of The Month

This Month's Question: When the opening to an outlet, junction, or switch point is less than 8 inches in any dimension, each conductor shall be long enough to extend at least _____ outside the opening of the enclosure. **A)** 3 inches, **B)** 4 inches, **C)** 6 inches, **D)** 8 inches.

Last Month's Question: A bare #4 copper conductor installed near the bottom of a concrete foundation or footing that is in direct contact with the earth may be used as a grounding electrode when the conductor is at least _____ ft in length. **A)** 25, **B)** 10, **C)** 15, **D)** 20. The answer is: **D)** [NEC 250.52(A)(3)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 6 No. 7** **July 2003**

Technical Advisory Committee Membership

The following individuals made application and were selected to serve on the WAC Technical Advisory Committee for the 2003-2004 rules development cycle. See the special April, May, and June issues of ELECTRICAL CURRENTS (available on the electrical website) for WAC development details.

POSITION	PRIMARY	ALTERNATE	POSITION	PRIMARY	ALTERNATE
Consumer	Mike Drennon	Craig Gresham	***Spec. Elec. Contr.***	Karen Peacey	Eric Lodjic
Training School	Paul Baeder	Burt Ross	***Spec. Elec. Contr.***	Miles Breneman	Colin Smith
CEU Provider	Christine Porter	Peg Reynolds	***Spec. Elec. Contr.***	J. R. Inman	Jerry Stonebridge
Elec. Engineer	Robert Schneider	Michael Case	***Journeyman Elec.***	Wayne Whitcomb	
Manufacturer	Joe Andre	Paul Riter	***Journeyman Elec.***	Janet Lewis	Jack Eidukas
Testing Lab	Jim Pierce	Chuck Mello	***Journeyman Elec.***	Tony Lewis	Dennis Williamson
L&I Inspection	Don Millar	Jack Knottingham	***Journeyman Elec.***	Bill Bowser	Douglas Barnard
L&I Inspection	Tim Hingtgen	Jim Hinrichs	***Journeyman Elec.***	Mike Grunwald	Chuck Paul
City Inspection	Bob Lloyd	Dick Alford	***Journeyman Elec.***	Bob Vandecar	
Gen. Elec. Contr.	Leonard Whalen	Dan Newton	***Specialty Elec.***	Doug Griffith	Randall Snell
Gen. Elec. Contr.	Jessica Ward	Paul Gray	***Specialty Elec.***	Dale Wentworth	Robert West
Gen. Elec. Contr.	Tom Gibelyou	Jim Fox	***Specialty Elec.***	Bill Neal	Mike Brewer
Gen. Elec. Contr.	Jerome Geissler	Mike Hjelseth	***Electric Utility***	Dave Hanson	Cliff Sears
Gen. Elec. Contr.	Barry Sherman	Larry Stevens	***Telecom Utility***	Jon Cornelius	Kevin Wilson

ATTENTION! APPLIANCE REPAIR PERSONS WITH 07B CERTIFICATION

When the effort to bring the appliance repair industry into compliance with the law was initiated, the only appropriate certification choices were 07-Nonresidential Maintenance and 07B-Residential Maintenance. Statute changes in 2002 enabled the creation of the 07D-Appliance Repair specialty. Many individuals that applied early and passed the 07B examination(s) would have opted for the more appropriate 07D certification if it existed at the time.

We have reviewed the 07B examination(s) outline and exam questions and determined that the code, theory, and safety knowledge demonstrated by successfully passing the previous 07B exam(s) is comparable to the knowledge that will be verified in the new 07D-Appliance Repair examinations.

We intend to be fair to the individuals that came into compliance at the first opportunity. Through December 31, 2003, we will allow 07B contractors, administrators, and electricians to "convert" their license or certification to 07D-Appliance Repair without examination or additional fees. You must request this one-time, irreversible conversion in a letter to Electrical Licensing and Certification, P.O. Box 44460, Olympia, WA 90504-4460. Separate letters must come from the individual electrician, administrator, or contractor and must include the existing certificate or license number and the candidate's signature. Contractors, electricians, and administrators who want to retain their 07B status and become combination certified (07B-07D) must make a new application, pay the appropriate fees, and pass the 07D examination(s).

Emergency Disconnects At Motor Fuel Dispensing Facilities

2002 NEC 514.11 requires emergency disconnecting for fuel dispensers and remote pumping systems and stipulates the controls must be acceptable to the *"authority having jurisdiction"* for both disconnecting and resetting the control circuit. This requirement applies to all station dispensers **including: diesel, kerosene, compressed/liquified natural gas, and liquefied petroleum gas (propane).**

WAC 296-46B-514 011(2) further clarifies: *"An emergency disconnecting means or operator must be provided to disconnect the pump or dispensing equipment serving gasoline, volatile flammable liquids, or liquefied flammable gases. The emergency disconnecting means or operator must disconnect all conductors of the circuit supplying all station dispensers and/or pumps (including the grounded*

conductor) simultaneously from the source(s) of supply." All of these products have the capacity to either support combustion or initiate an explosion in the event of an accident. WAC 296-46B 514 011(4) further clarifies the acceptable means for disconnecting and resetting the control circuit. Installers should become familiar with all requirements of NEC 514 and WAC 296-46B before making these installations.

● ATTENTION! Electrical Specialty Training Program Providers And Students

Effective with the May 23, 2003 adoption of WAC 296-46B-971, graduates from electrical specialty training programs (from a Washington state public community or technical college, not-for-profit nationally accredited technical or trade school licensed by the work force training and education coordinating board) may receive credit for work experience towards electrician exam eligibility.

Training school programs must be approved **before** graduates request credit for work experience hours toward electrician certification. **Until December 31, 2003,** existing electrical training programs may apply for **retroactive approval** of their program to determine the number of hours that may be credited for program graduates. If the specialty electrical training program applies before December 31st and is approved, students that successfully completed the program after January 1, 2000 may receive work experience credit. If you are an electrical specialty trainee affected by this change, contact the school you attended to see if they have submitted the training program to the department for approval.

● "Grandfathering" Equipment Repair Certification

As of May 20, 2003, Engrossed Substitute Senate Bill (ESSB) 5713 allows qualifying individuals to receive the new 07E equipment repair specialty electrician certification without examination. Qualifying experience for "grandfathering" must be obtained performing equipment repair-type work. Scope of work for the equipment repair specialty is defined in rule [WAC 296-46B-920(2)(l)].

All individuals who wish to receive 07E certification without testing must complete an **Application for Equipment Repair Specialty Electrician Certification Without Examination** and pay the appropriate certification fee **before December 1, 2003.** Persons who qualify are those who:

- Provide evidence that they have successfully completed an apprenticeship program approved under chapter 49.04 RCW for the machinist trade, or
- Provide evidence they were employed as of April 1, 2003, by a factory-authorized equipment dealer or service company and have worked doing equipment repair for a minimum of 4,000 hours. (An individual's application must include an attachment that documents an employer's "factory-authorized" status.)

The ability to receive this certification without examination applies only to the specialty electrician certification, **not** to specialty administrator certification. 07E specialty contractors may initially have an assigned "temporary" administrator. The assigned individual must obtain certification by examination within 12 months.

● Electrical Question of the Month

This Month's Question: A bare #4 copper conductor installed near the bottom of a concrete foundation or footing that is in direct contact with the earth may be used as a grounding electrode when the conductor is at least _____ ft in length. **A)** 25, **B)** 10, **C)** 15, **D)** 20.

Last Month's Question: Where single conductor cables comprising each phase or neutral of a circuit are connected in parallel in a cable tray, the conductors shall be installed _____ to prevent current unbalance in the paralleled conductors due to inductive reactance. **A)** in groups consisting of not more than three conductors per phase or neutral, **B)** in groups consisting of not more than one conductor per phase or neutral, **C)** as individual conductors securely bound to the cable tray, **D)** in separate groups. The answer is: **B)** [NEC 392.008(D)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 6 No. 6** **June 2003**

July 21, 2003 Deadline For Making WAC 296-46B Revision Proposals

Industry proposals to WAC 296-46B **must be made electronically** (e.g. compact disc, floppy disk, or as an email attachment) using the form supplied by the department. An electronic fill-in version of the form is available on our website homepage and upon written request to Chief Electrical Inspector (P.O. Box 44460, Olympia, WA, 98504-4460). Until July 21, 2003, proposals may be mailed (i.e. compact/floppy disc) to Chief Electrical Inspector or sending the proposal(s) as an email attachment to **electricalwac@lni.wa.gov**.

At the May 29, 2003 Technical Advisory Committee (TAC) meeting, all of the primary (and most of the alternate) committee positions were filled. We still need alternates for two journeyman electrician positions and the electrical testing lab position. Interested persons should submit a letter of interest including documentation showing constituency support to the Chief Electrical Inspector.

Electrical Exam Development Workgroup Representatives Needed

We are assembling an exam development workgroup, comprised of professional educators, subject matter experts, and other individuals representing and supported by electrical industry groups, for the purpose of reviewing all of the new electrical certification examination questions based on the 2002 NEC, chapter 19.28 RCW, and WAC 296-46B. The workgroup will convene sometime in mid August and will require 3-4 full days of intense review. The review will most likely be split into two sessions.

To submit your name for consideration to participate on the exam review workgroup please complete, and fax the Electrical Exam Development Workgroup application to Department of Labor and Industries at (360) 902-5229. Please submit your application by June 30th.

Committee members will be required to sign a non-disclosure statement, and must have completed or do not intend to take any of the exams that they review. Applications are available on our web site at: **www.lni.wa.gov/scs/electrical/examdev.pdf.**

August 1, 2003 Deadline-Major Change For Installation Of Feeders

WAC 296-46B-250(1) states *"**Effective August 1, 2003**, an equipment grounding conductor must be installed with the circuit conductors between buildings and/or structures. A grounded conductor (i.e. neutral) is not permitted to be used in place of a separate equipment grounding conductor between buildings and/or structures."* An equipment grounding conductor must be installed between buildings or structures regardless of the lack of or presence of other metallic systems.

Clarification of WAC 296-46B-010 (8) Inspection—Siding Before Wiring

In the November 2002 issue of the Electrical Currents, an article was published about the problems surrounding nailing penetrations of wiring and electrical equipment. Recommendations from Building Industry Association of Washington (BIAW) members resulted in new text that now reads: "*Prior to completion of an exterior wall cover inspection, either: (a) The exterior shear panel/sheathing nail inspection must be completed by the building code inspector; or (b) All wiring and device boxes must be a minimum of 63 mm (2 1/2") from the exterior surface of the framing member; or (c) All wiring and device boxes must be protected by a steel plate a minimum of 1.6 mm (1/16") thick and of appropriate width and height installed to cover the area of the wiring or box.*"

Since many building inspection authorities do not require a separate shear panel/sheathing nailing inspection, condition (a) above will be met if the building sheathing is applied and nailed. If siding materials are installed per manufacturers' instructions and electrical installers maintain adequate clearances from interior and exterior finished surfaces, cables are not likely to be subject to damage.

● Festoon Or Flat Cable For Indoor Use At Trade Shows

The trade show industry has asked to use flat wire festooning cable as a wiring method for distributing temporary power at trade shows. The use of flat cable under carpet provides a lesser trip hazard than round cord but is not one of the wiring methods recognized in NEC Article 525 or 527. Underwriters Laboratory (U.L.) has developed a new standard, U.L. 2305, for this application of flat cable. An existing U.L. category "XNRW" is in place to cover attachment plugs and cord connectors. The department will allow the use of 4 or 5 conductor flat cable, in sizes #12 and #10 AWG with listed plugs and connectors, for indoor temporary shows.

● WAC 296-46B-905(3)(a) Temporary Service(s)—Fee Error

There is a typographical error in the recently adopted WAC 296-46B. The fee for temporary services and feeders sized from 401 to 600 amperes should be $94.80 not $98.80. The printed version of the WAC incorrectly says that fee is $98.80.

● Weatherproof "Bubble Covers" On Receptacles Outdoors

2002 NEC 406.8(B)(1) states: *"15-and 20 ampere, 125-and 250-volt receptacles installed outdoors in a wet location shall have an enclosure that is weatherproof whether or not an attachment plug cap is inserted."*

This is a substantial change from the 1999 NEC Article 410-57 (b)(2) that read: *"A receptacle installed in a wet location where the product intended to be plugged into it will be attended while in use (e.g., portable tools, etc.) shall have an enclosure that is weatherproof when the attachment plug cap is removed."*

Effective with the adoption of the 2002 NEC (May 23, 2003) all receptacle outlets installed outdoors in a wet location must be weatherproof regardless of whether they are attended or not. This does not affect existing installations previously approved at a jobsite. When temporary power equipment is relocated it must be updated to comply with the new requirements.

● Dangerous Materials Installed In Plenum Spaces

Specific wiring methods are required for all electrical and telecommunications systems installed in plenums used for environmental air. The intent of these costly measures is to prevent the rapid spread of combustion or toxic combustion by-products through environmental air systems. We have been asked to remind contractors and installers that they are defeating the intent of these code requirements if they install the proper listed materials but leave polyethylene (flammable) pull-strings behind for ease of future installation. Though the NEC does not specifically address this issue, mechanical and building codes prohibit these materials in plenum spaces. Our inspectors may not be able to write a specific correction to a contractor based on the standards we enforce, but they are empowered to make referrals to building officials when they encounter this potentially dangerous practice.

● Electrical Question of the Month

This Month's Question: Where single conductor cables comprising each phase or neutral of a circuit are connected in parallel in a cable tray, the conductors shall be installed _____ to prevent current unbalance in the paralleled conductors due to inductive reactance.

A) in groups consisting of not more than three conductors per phase or neutral, **B)** in groups consisting of not more than one conductor per phase or neutral, **C)** as individual conductors securely bound to the cable tray, **D)** in separate groups.

Last Month's Question: Flexible cord used in a listed extension cord set, that is permitted to be supplied by a 20-ampere branch circuit must be constructed of _____ or larger copper wire. A) 12 AWG, B) 14 AWG, C) 16 AWG, D) 18 AWG. The answer is: C) [2002 NEC 240.5(B)(3)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 6 No. 5** **May 2003**

● No Electrical Inspections In State Jurisdiction Areas—Tuesday, June 3, 2003

All state electrical inspectors will be attending mandatory training at the Tumwater Labor and Industries Building on June 3, 2003. In many areas inspections may also be effected on the 2nd and 4th due to travel time to and from Tumwater. This training is not open to the public.

Normally we attempt to provide all staff training in several locations on different dates or in half-day online teleconference sessions in order to minimize impact on inspection services and to minimize travel time loss. However, due to the late adoption of the rules and 2002 National Electrical Code (NEC), the lack of a transition period for enforcement of the 2002 NEC and new rules, the number and complexity of changes in the electrical statute, and the immediate adoption of a portion of the rules, we will provide a full day of training for all of our inspection staff in a one-time session in the Tumwater service location.

● Adoption Of 2002 NEC And WAC 296-46B Will Be May 23, 2003

Chapter 296-46B WAC and the 2002 National Electrical Code (NEC) will become effective May 23, 2003. Electrical permits purchased after the WAC effective date will be inspected under the 2002 NEC. Plan review projects received after the effective date will be under the 2002 NEC. All electrical certification examinations will be updated based on the 2002 NEC sometime in late summer. Very few questions will be affected by the change. Copies of the rules are posted now on the Electrical Program Web site at: **http://www.lni.wa.gov/scs/electrical/wac296-46B.pdf**.

Effective April 22, 2003 the Director of Labor and Industries adopted WAC 296-46B-020 and WAC 296-46B-900 through WAC 296-46B-965 to allow immediate access to the new electrical specialties made possible by action during the 2002 legislative session. Applications for the 03A, 06A(electricians only), 06B, 07, 07A, 07B, 07C, 07D, 07E, and 10 electrical specialty electrician, administrator, and contractor status are available today on our Web site or in our field offices.

About May 12, 2003 we will mail a copy of the new electrical rules (WAC 296-46B) to all electricians, master electricians, and administrators. There have already been changes affecting the electrical statute in this legislative session, so we will not print chapter 19.28 RCW until these changes to the statute are effective.

● Next WAC Development Cycle Meetings Begin In Tumwater May 29, 2003

The initial Technical Advisory Committee (TAC) meeting will be **Thursday, May 29, 2003**, 9:00 AM to 3:00 PM, in the auditorium at the Labor and Industries building, 7273 Linderson Way SW, in Tumwater. The initial meeting will be to clarify the WAC development process, describe expectations, answer questions, and fill any remaining positions. This meeting is open to the public.

The deadline for submitting your letter of interest in joining the TAC is May 23, 2003. The TAC will have 27 members chosen from a wide cross-section of the electrical industry. TAC members will be notified of their appointment prior to the meeting on May 29th. Details and timelines for meeting dates, and timelines for submitting proposals are included in a *Special Edition Electrical Currents* newsletter available on our 2003-2004 WAC Development Web page at: **http://www.lni.wa.gov/scs/electrical/2003-2004wac/03-04wac.htm**.

Proposals to modify WAC 296-46B must be made electronically (e.g. compact disc, floppy disk, or as an email attachment sent to **electricalwac@lni.wa.gov**) using the form supplied by the department. An electronic fill-in version of the form is available at the 2003-2004 WAC Development Web page address above. Electronic versions are also available upon written request to Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460.

● Bills From The 2003 Legislative Session That Affect The Electrical Program

Legislation from this session supersedes the electrical WAC rules when a bill becomes effective, typically 90 days after the Governor signs it. The following is a synopsis of current legislative changes.

SHB 1848-Medical equipment may be installed and maintained by qualified factory engineers or third-party service companies with equivalent training. Installation does not include services, feeders, branch circuits, or conduits and raceways.

ESB 5210-Allows the 07C-restricted nonresidential maintenance specialty to have training requirements of less than two years to qualify for examination.

SSB 5434-Certified electricians and supervised electrical trainees may do electrical work for a nonprofit corporation.

ESSB 5713-This bill addresses these primary issues.

- Allows random inspection of basic electrical work (as adopted in rule).
- Allows either journeyman or residential plumbers and electricians to replace like-in-kind household appliances having electrical and limited waste and/or water connections.
- Allows exemption from licensing/certification for appliance repair done by employees of manufacturer-authorized dealer or service companies.
- Allows the 07E-equipment repair specialty to have training requirements of less than two years.
- Allows 07E-equipment repair specialty electrician certification for employees of factory-authorized equipment dealers and service companies and for machinists that have completed an approved apprenticeship without examination.

The complete text of these bills is available at: **http://search.leg.wa.gov/pub/textsearch/default.asp**

● New Failed Certification Exam Review Procedures Effective April 22, 2003

Certification examinations provide verification of skills learned during training; they are not "teaching tools" like examinations administered in schools or training programs. If a candidate wishes to contest an examination, a written request must be made to review the failed exam (see WAC 296-46B(6) and (7)).

To challenge an examination, you must pay a review fee ($105.90). You will be given one hour to review the examination. You can only review the questions you missed and the answers you marked. The department will not supply you with the correct answers or allow you to review questions that you answered correctly. You must challenge enough questions to result in a passing score. All questions challenged must be supported by references to published books/standards to support your position. To protect the integrity of the questions, exam reviews will only be conducted in Tumwater. You may bring nothing into the review room. Notepaper to document your challenges and copies of the NEC, WAC, RCW, and other reference documents used to develop the examination will be provided by the department for use during the review.

● Electrical Question of the Month

This Month's Question: Flexible cord used in a listed extension cord set, that is permitted to be supplied by a 20-ampere branch circuit must be constructed of _____ or larger copper wire. A) 12 AWG, B) 14 AWG, C) 16 AWG, D) 18 AWG.

Last Month's Question: A junction box is connected to conduit that extends directly to the forming shell that supports a wet-niche underwater luminaire in a swimming pool. This junction box **shall**: **A**) be listed for the specific use and have more grounding terminals than conduit entries.; **B**) be bonded to the pool common bonding grid with a solid copper conductor not smaller than #6 AWG.; **C**) be made of brass, stainless steel, or other corrosion-resistant metal.; **D**) be protected from physical damage and mounted not less than 8 inches above the pool deck.

● **The answer is:** A) [2002 NEC 680.24(A)(1) and 2002 NEC 680.24(D)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 6 No. 4** **April 2003**

Adoption Of 2002 NEC And WAC Target Effective Date Is Now End Of May

The WAC public hearings were held with videoconference equipment setups in eight different locations on March 25th and 26th. Chapter 296-46B WAC and the 2002 National Electrical Code (NEC) is targeted to be adopted and become effective the end of May 2003. Copies of the rules are posted now on the Electrical Program website at **http://www.lni.wa.gov/scs/electrical**, at **What's New**, then **Draft WAC Rules**. Electrical permits purchased after the WAC effective date will be inspected under the 2002 NEC. Plan review projects received after the effective date will be under the 2002 NEC. Although very few questions will be affected by the change, electrical examinations will be updated based on the 2002 NEC sometime this summer. All of the final dates, information, and links to the necessary applications will be sent to our listserver subscribers on our automatic e-mail notification system. Join at **http://listserv.wa.gov/archives/electrical.html**. Click on "**Join or leave the list**", then fill in the necessary information to subscribe.

LOCATION CHANGE FOR THE APRIL ELECTRICAL BOARD MEETING

The April 24, 2003, Electrical Board meeting will be held at 9:00 AM, in the Lee Ann Miller Conference Center, Attorney General's Office, Rowe Six–Building One, 4224 6th Avenue SE, Lacey, WA 98504, (360) 438-8584. The regular meeting location in Tumwater is booked for another event.

RECRUITMENT ANNOUNCEMENT-Four Electrical Board Positions Available

In July 2003 the following Electrical Board Positions will be available for appointment by the Governor: Electrical Contractor (two), Electrician, and the Electrical/Telecommunications Equipment Manufacturer/Distributor. Incumbent members and interested qualified persons may apply for these positions. Contact Rhonnda Jenkins at (360) 902-5572 or Angie Wharton at (360) 902-5259 for an application. Applicants should submit a letter of interest, completed application form, and current resume to the office of the Chief Electrical Inspector, PO Box 44460, Olympia, WA 98504-4460, no later than May 31, 2003.

WAC Development Kick-Off Meeting In Tumwater

There will be a kick-off meeting **May 29, 2003**, 9:00 AM to 3:00 PM, in the auditorium at the Labor and Industries building, 7273 Linderson Way SW, in Tumwater to aid in establishing stakeholder membership for the next revision process. The process will closely approximate the National Fire Protection Association (NFPA) code panel model that has successfully served the electrical industry for 100 years. An annual revision cycle will be established to coincide with revisions due to legislative actions.

Stakeholder membership will consist of an engineer, training program, utilities, telecommunications, testing laboratory, manufacturer, electricians, contractors, regulators, and general public. To ensure equity in the revision process, representation will be proportionate to involvement in the industry. Like the NFPA code panels, workgroup representatives must have decision-making authority at the meetings. Specific details regarding proposals, stakeholder review, action, etc. will be included in the May edition of the ELECTRICAL CURRENTS.

Use Of Existing Underground Conduit

In their January 2003 meeting, the Electrical Board again affirmed that properly licensed electrical contractors or property owners working under the exemption in RCW 19.28.261 must perform installation of underground electrical conduit. Conduit systems must be visually inspected under a valid electrical work permit prior to being covered. When our inspectors are called to inspect new conductors in existing conduit systems, they will require documentation of the original permit, inspection, and approval of the

covered raceway. If this information cannot be provided, we will not allow the conduit system to be used unless it is completely exposed for inspection.

● NEW WAC PROPOSAL-Feeders Between Two Or More Buildings Or Structures

This rule change exceeds the requirements of the NEC and has economic impact, so it has a delayed implementation date to allow contractors and installers time to adjust their bidding and installation practices. Proposed WAC 296-46B-250(1) states "***Effective August 1, 2003**, an equipment grounding conductor must be installed with the circuit conductors between buildings and/or structures. A grounded conductor (i.e., neutral) is not permitted to be used in place of a separate equipment grounding conductor between buildings and/or structures.*"

● EMT Installed In Concrete On Or Below Grade

The current WAC 296-46A-348 (soon to be WAC 296-46B-358) states: "*electrical metallic tubing* (EMT) *may not be installed in direct contact with the earth or in concrete on or below grade*". The intent of this WAC rule is to prevent the corrosion of "thin-wall" conduit where installed in concrete. In virtually all areas of Washington, concrete draws moisture from the soil. Therefore, the use of EMT in both walls and slabs is prohibited when the concrete is in direct contact with the earth.

● Audio Cable Installed As Fixed Wiring Within Buildings

Our inspectors have encountered cable listed for use as flexible cord installed inside the walls of residential units as a permanent wiring method to speaker systems. Cords and cables described in 2002 NEC Table 400.4 must comply with all installation criteria found in NEC 400.7-Uses Permitted and NEC 400.8-Uses Not Permitted. The Code clearly states that flexible cords and cables shall not be used "*where concealed by walls, floors, or ceilings or located above suspended or dropped ceilings*."

Popular speaker cable type SPT (sometimes called "monster cable") is a listed flexible cord and is not suitable when installed in walls, ceilings, etc. as the fixed wiring method of a structure. This type of flexible cord may be installed for home audio provided it is exposed, not run through holes in walls, ceilings, floors, windows, doorways, not attached to building surfaces, or otherwise in violation of NEC 400.7 and .8. Speaker cabling installed as a fixed wiring method within a building must meet the requirements of NEC Article 725. If the system output is Class 1, Class 2, or Class 3, the installed cable must have the equivalent listing and rating.

● Telecommunications Installations Standards In Dwelling Units

The electrical/telecommunications statute (chapter 19.28 RCW) requires "*all installations of wires and equipment defined as telecommunications systems*" to conform to the NEC, WAC, and approved ANSI/TIA/EIA standards. Even though installations in dwelling units generally do not require permits and inspections, the work must be done according to the appropriate standards. If a customer complaint or a required electrical inspection on the same premises reveals violations that require corrections, the telecommunications contractor will be required to purchase a permit for the return trip to verify the violations have been fixed.

● Electrical Question of the Month

This Month's Question: A junction box is connected to conduit that extends directly to the forming shell that supports a wet-niche underwater luminaire in a swimming pool. This junction box **shall**: **A**) be listed for the specific use and have more grounding terminals than conduit entries.; **B**) be bonded to the pool common bonding grid with a solid copper conductor not smaller than #6 AWG.; **C**) be made of brass, stainless steel, or other corrosion-resistant metal.; **D**) be protected from physical damage and mounted not less than 8 inches above the pool deck.

Last Month's Question: Overcurrent protection is required on the secondary conductors of all transformers. **A**) True; **B**) False. **The answer is: B)** False [2002 NEC Table 450.3(A) and (B)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 6 No. 3** **March 2003**

● Public Hearings For Proposed Changes To The Electrical WAC Rules

Videoconference equipment will be available to accept public comments at these locations:

March 25, 2003—1:00-5:00 PM	March 26, 2003—1:00-5:00 PM
Labor and Industries Building, Room S117 7273 Linderson Way, **Tumwater** 360-902-6195	Labor and Industries, Room VANCSM 1 312 SE Stonemill Dr., #120, **Vancouver** 360-896-2396
Labor and Industries, Room EVER2 729 100th Street SE, **Everett** 425-290-1379	Labor and Industries, Room TUKWTRN 12806 Gateway Drive, **Tukwila** 206-835-1037
Labor and Industries, Room EWENLG 519 Grant Road, East **Wenatchee** 509-886-6590	Labor and Industries, Room KENNLG 1 4310 West 24th Avenue, **Kennewick** 509-735-0100
Labor and Industries, Room 102 15 W Yakima Avenue, #100, **Yakima** 509-454-3790	Labor and Industries, Room SPOK 1 901 N. Monroe St., #100, **Spokane** 509-324-2574

We Must Receive Written, E-Mailed, Or Faxed Comments No Later Than March 27, 2003

Mailing Address: Chief Electrical Inspector
Department of Labor and Industries
PO Box 44460, Olympia, WA 98504-4460

FAX Number:
(10 page limit by FAX) 360-902-5292
E-mail: SWAJ235@lni.wa.gov

WAC 296-46A—*Safety Standards-Installing Electric Wires and Equipment-Administrative Rules*, WAC 296-401B—*Certification of Competency for Journeyman Electricians*, WAC 296-13—*Practice and Procedure-Electrical Board*, and WAC 296-402A—*Electrical Evaluation/Certification Laboratory Accreditation* have been revised and consolidated together into a single document titled **WAC 296-46B—*Safety Standards-Installing Electric Wires and Equipment-Administrative Rules***. The proposed revisions: adopts the 2002 National Electrical Code, creates four new electrical specialties, reduces the on the job training requirements for some specialties, increases the trainee renewal period to two years, includes master electrician certification and fees, and makes technical changes and clarification of existing rule sections. The tentative effective date for these rules is early May 2003.

The proposed rule changes are available online at: http://www.lni.wa.gov/scs/electrical/whatsnew.htm under the Draft WAC Rules link. Copies of the proposed rules will also be available at the public hearings.

● REMEMBER!! Engine Generator Listing And Labeling Required April 30, 2003

From the April 2002 issue of this newsletter: UL 2200, *Stationary Engine Generator Assemblies* is the standard recognized by the department for the approval of stationary engine generators. The standard has been in effect since 1998 and manufacturers have had adequate time to conform; in fact, hundreds of listed products are available today. **Beginning April 30, 2003**, the department will require all engine generators rated 600 volt or less to be listed/labeled (or field evaluated) by a Washington State accredited electrical products certification laboratory or electrical products evaluation laboratory.

● ATTENTION "THIRD-YEAR" SPECIALTY TRAINEES

Individuals who were allowed to "grandfather" previous experience and were issued special third-year training certificates **can no longer work unsupervised or supervise** other trainees. If you have not completed the examination and received your specialty electrician certificate, you must renew your training certificate on or before the expiration date on your current certificate.

● ATTENTION ALL SPECIALTY TRAINEES

The year designation now on training certificates will not be printed on training certificates when the new electrical WAC rules become effective and supervision requirements will be changing.

100% supervision will be required of trainees working in the **03A**-*Domestic Well*, **06B**-*HVAC/refrigeration-Restricted*, **07A**-*Nonresidential Lighting Maintenance and Lighting Retrofit*,

07B-*Residential Maintenance*, **07D**-*Appliance Repair*, and **10**-*Door, Gate, and Similar Systems* specialties until they are eligible for and pass their examination (*06B*-1000 hours, others-720 hours). When these trainees pass the examination, they may work unsupervised until their modified training certificate expires.

Current supervision standards (75%) are required of trainees in the **02**-*Residential*, **03**-*Pump and Irrigation*, **04**-*Signs*, **06**-*Limited Energy*, **06A**-*HVAC/refrigeration*, **07**-*Nonresidential Maintenance*, **07C**-*Restricted Nonresidential Maintenance*, and **07E**-*Equipment Repair* specialties. Similar supervision by a **01** journeyman in a one-to-one ratio is still required of trainees doing commercial/industrial work.

● NEW ELECTRICAL SPECIALTIES—Opportunities For Certification

Engrossed Senate Bill 6630 from the 2002 legislative session enabled the creation and modification of electrical specialties. Based on industry input, there will be another "open-window" period (until September 30, 2004) for individuals with previous appropriate electrical experience to apply their experience towards qualifying for the specialty electrician examination in certain specialties. The following specialties will be in the open-window opportunity:

Revised **03A**-*Domestic Well*
Revised **06A**-*HVAC/refrigeration system*
NEW **06B**-*HVAC/refrigeration system-Restricted*
07A-*Nonresidential Lighting Maintenance*
07B-*Residential Maintenance*
NEW **07C**-*Restricted Nonresidential Maintenance*
NEW **07D**-*Appliance Repair*
NEW **07E**-*Equipment Repair*
10-*Door, Gate, and Similar Systems*

Individuals with prior experience in one or more of the areas of electrical maintenance or installation above should review details of proposed scope(s) of work to ensure that they are making the best choice(s) about the applicability of their experience. **All electricians are examined on the entire scope of work that they are allowed to do, not just the specific experience they may have.** The proposed rule changes are available online at our home page under the **What's New** then **Draft WAC Rules** links.

● Owner's Exemption—Manufactured/Mobile Homes (Lots & In Mobile Home Parks)

The department's position on property owners developing electrical facilities to support mobile homes and manufactured homes on lots and in mobile home parks needs to be stated so we can ensure consistency statewide. The statute does not require contractor licensing or electrician certification of a property owner doing electrical work on their residence, farm, or place of business except for the "construction" of a new building for rent, sale, or lease. The department does not consider the placement of a manufactured/mobile home to be building construction.

- An electrical contractor must install all electrical services, feeders, and accessory circuits if the home, lot, or park space is for sale.
- An electrical contractor or property owner may install electrical services, feeders, and accessory circuits if ownership of the lot or park space is retained.
- An electrical contractor or manufactured/mobile homeowners may install feeders and accessory circuits on a rented or leased lot or park space.

● Electrical Question Of The Month

This Month's Question: Overcurrent protection is required on the secondary conductors of all transformers. **A**) True; **B**) False

Last Month's Question: The grounding conductor connected to the available electrodes for a feeder panel fed from a separate building shall be sized per 2002 NEC-_____; based on the size of the _____. A) 250.66, main breaker; B) 250.122, overcurrent device protecting the feeder; C) 250.122, main breaker; D) 250.66, conductors feeding the panel.
The answer is: D) [NEC 250.32(E)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 6 No. 2** **February 2003**

Adoption Of 2002 NEC And WAC Revisions Nearing Completion

At their January 30, 2003 meeting, the Electrical Board unanimously recommended approval of the department's electrical rules revisions. Electrical and HVAC/R industry representatives testified that they had reached compromise on the difficult HVAC/R scope-of-work revisions. Although some issues remain unresolved and will be addressed again in future revision proposals, spokesmen from both sides unanimously supported proceeding with the current rules package. **The additional meetings that were needed to reach compromise have pushed the "target" effective date of the 2002 NEC and WAC rules to early May 2003**. There will be no transition period like we have allowed in the past.

The dates for public hearings have been tentatively set for 1-5 PM at the following L&I service locations:

- March 25, 2003—Tumwater, Everett, Yakima, and East Wenatchee
- March 26, 2003—Vancouver, Tukwila, Kennewick, and Spokane

The proposed rules will be posted on the Electrical Program website about February 20, 2003. If you want to be assured of timely notification of the finalized hearing locations, times, and dates you must sign up for our list server automatic e-mail notification at: **http://listserv.wa.gov/archives/electrical.html**. Click on "Join or leave the list", then fill in the necessary information to subscribe.

Factory Assembled Structures (FAS) Inspections

All remodel and renovation work (e.g. electrical, plumbing, structural, mechanical, etc.) done within a manufactured home must be permitted and inspected by the FAS program. Unlike the Electrical Program rules, FAS rules for permitting allow the general contractor to cover all trades involved in a remodel or renovation inside a manufactured home. Under the FAS rules, a single FAS permit may be purchased to cover multiple trades and contractors.

Employment Register For State Electrical Inspector Positions

Effective January 10, 2003, the Department of Personnel's board approved a request that all new applicants for L&I Electrical Inspector positions possess either a General Administrator or Master Journeyman Electrician certificate in addition to the statutory minimum qualifications already in place (see RCW 19.28.321). This will eliminate the need for a register examination. There will be no ranking of applicants as we have had in the past. All qualified applicants will be posted when a supervisor requests a hiring referral. The previous Electrical Inspector register is abolished and all candidates who are currently on it must reapply and meet the new requirement.

NEW WAC PROPOSAL-Emergency Disconnecting Means-Service Stations

The emergency disconnecting means required by 2002 National Electrical Code (NEC) 514.11 and Washington Administrative Code (WAC) 296-46A-514 (soon to be WAC 296-46B-514) are required to be in specific locations in attended and unattended fuel dispensing stations for gasoline and other volatile, flammable types of gases or liquids. In Washington the emergency disconnecting means must be located outdoors, red in color, and labeled with a red identification plate with 1-inch letters. Emergency controls must shut off all power to all dispensing equipment at the station.

For attended facilities, the disconnect must be within sight and not more than 50 feet from the pump or dispensing equipment.

For unattended facilities, the proposed rule change requires the disconnect to be within sight, not closer than 20 feet, and not more than 50 feet from the pump or dispensing equipment. To reduce the possibility of accidentally re-energizing equipment during an "emergency shutdown" situation, the proposed rule requires that if an electrically held contactor and disconnecting pushbutton is used, the pushbutton may

not function as the resetting mechanism for the electrically held contactor. The resetting means must be: **a)** located at least 15 feet away from or out of sight from the disconnecting pushbutton; **b)** installed behind a cover or guard; and **c)** identified with an identification plate that is substantially black in color.

● NEW WAC PROPOSAL-Marking On Motors And Multi-Motor Equipment

The NEC or WAC requires listing for some special motors (e.g. classified locations, fire pumps, and swimming pool/hot tub/spa). Other motors must be manufactured to appropriate safety standards. Though motors listed to the relatively new UL 1004—Electric Motors standard are beginning to be available, a new proposal in WAC 296-46B-430 will make it clear that:

There is no requirement that all motors be listed or field evaluated. In general, motors must be manufactured to National Electrical Manufacturers Association (NEMA) standards for motors. However, this requirement does not apply to motors that are a component part of equipment listed or field evaluated by a laboratory or are a component part of industrial utilization equipment approved by the department per WAC 296-46B-030.

● NEW WAC PROPOSAL-Flexible Supply Whips For Equipment

The 06A—HVAC/R, New 06B—HVAC/R Restricted, and New 07E—Equipment Repair specialty electricians are specifically allowed to "*repair, replace, or maintain line voltage flexible supply whips not over 6' in length, provided there are no modifications to the characteristics of the branch circuit/feeder load being supplied by the whip.*" There is no limitation on the whip raceway method. This means that liquidtight flexible metal conduit, flexible metal conduit, or other type of raceway may be replaced with liquidtight flexible nonmetallic conduit, or vice versa, as long as NEC grounding and environmental requirements are met, and the raceway is listed and approved for the application.

Installation requirements for these types of raceways are in the appropriate (raceway-specific) section of 2002 NEC Chapter 3. Equipment grounding and bonding requirements are addressed in 2002 NEC 250.102, .134, and .118. With the ability of the above specialties to do this maintenance work, comes the responsibility for exam candidates to show competence with the materials and wiring methods on the electrician exams.

● Inspection When Telecommunications Conductors Are Fished Into Walls

Department electrical inspectors are receiving cover inspection requests from some telecommunications contractors when the installation only consists of mud-rings and pull-strings placed to allow installation of cables later in the project. This type of cover inspection is not required, however you will be charged for the inspection trip if you request it. A "mud-ring and pull-string" inspection does not replace the mandatory inspection of the telecommunications cables installed, supported, and secured within the structure, even when the cable ends are "fished" into finished walls. Failure to have a cabling installation inspected is a violation subject to citation. A cable inspection must be requested and made.

● Electrical Question of the Month

This Month's Question: The grounding conductor connected to the available electrodes for a feeder panel fed from a separate building shall be sized per 2002 NEC _____, based on the size of the _____.

A) 250.66, main breaker; **B**) 250.122, overcurrent device protecting the feeder; **C**) 250.122, main breaker; **D**) 250.66, conductors feeding the panel.

Last Month's Question: According to the 2002 NEC, 15- and 20-ampere, 125- and 250-volt receptacles installed outdoors in a wet location where the product intended to be plugged into it will be attended while in use (e.g., portable tools, etc.) shall have an enclosure that is weatherproof when the attachment plug cap is inserted. A) True; B) False.

The answer is: A) True [2002 NEC 406.8(B)(1)]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 6 No. 1** **January 2003**

ATTENTION 3rd-Year Specialty Trainees And Temporary Administrators

If you were previously qualified and have not yet passed your specialty electrician or administrator examination, you can still take the exams. **You remain eligible for the examination.**

For 3rd-year specialty (unsupervised) trainees the card's expiration date reinstates mandatory supervision for 75% of the working day. If you have not passed the appropriate examination and received your specialty electrician certificate, you must renew as a standard trainee and work under proper supervision by a certified specialty electrician while you perform electrical work as a trainee.

If you are a temporary administrator and have not passed your administrator examination, your "temporary" administrator status expired. The contractor that you were assigned to must obtain a qualified administrator within 90 days. (You may continue to take the examination during this 90-day period and will receive permanent certification if you pass.) If the firm fails to obtain an administrator, the department will suspend the electrical contractors license on the 91st day.

Our Stakeholders Say Compliance Is Serious Business

The department has recently investigated several firms that have allowed unlicensed electrical contracting firms to work under a licensed contractor's electrical work permit. Buying a permit for an unlicensed contractor is illegal and will not be tolerated. This activity undermines department and industry efforts to create a level playing field for licensed electrical contractors. Administrators and firms participating in this scam against the legitimate industry will be issued citations and may receive a suspension of their certification and/or license.

Recent Changes To Electrician And Administrator Examinations

Effective January 6, 2003 all questions referenced from WAC 296-24—General Safety and Health Standards have been removed from Section II-Administration and Safety of all administrator examinations. This will reduce the total number of questions in this section of the administrator exams from 30 to 23. The time allowed to complete Section II on all administrator exams will remain at 1-hour.

The current electrical examinations are based on the 1999 NEC. The department will make the transition to the 2002 NEC for exam references shortly after it is formally adopted in Washington. (The target effective date is still late March to early April 2003.) Only a small number of questions and answers in the exam database will actually be added or modified due to the 2002 NEC adoption.

QuickCards—Internet Renewal Of Electrical Certificates And Contractor Licenses

Since November and average of 50 electrical administrator certificates, electrician certificates, training certificates, and electrical contractor licenses have been renewed each week using the QuickCards on-line system. This is a good way to save some time and money in your busy schedules. Give the new system a try at: **http://www.lni.wa.gov/QuickCards**.

Washington Master Electrician Certification Is Now Available

Many individuals have already been notified by mail that they may be eligible for the new master electrician certification without taking a master electrician examination. To be eligible, the new law requires that (before July 1, 2005) you hold a valid 01 administrator certificate and a journeyman electrician certificate for the previous four years or a valid specialty administrator certificate and matching specialty electrician certificate for the previous two years. Anyone that received journeyman electrician status prior to June 30, 2001 or received specialty electrician status by June 30, 2003 and passes the matching administrators exam may make application before July 1, 2005 to "grandfather" a

master electrician certificate. Individuals who have "temporary" administrator or electrician certification status are not eligible.

The cost of the three-year master electrician certificate is the same (per year) as an administrator certificate. You may choose to keep separate administrator and electrician certificates, but you will have to renew each with separate fees at a higher overall cost. You may have "combination" master specialty electrician certification only if you have matching "combination" specialty administrator and "combination" specialty electrician status.

At the time of your application you must provide 24 hours of continuing education (including at least 8 hours of code update) that have not been previously submitted for certification renewal. If you have recently paid the fees and used the CEU's to renew your administrator or electrician certification, it may be to your economic advantage to wait until later in your renewal cycle (prior to July 1, 2005) before applying to "grandfather" master electrician certification. Applications to grandfather will not be accepted until within 90 days of the expiration of either your electrician or administrator certificate, whichever is first.

● Sample Exams Will Soon Be Available On-line

In an effort to provide exam applicants with additional preparatory material, we will be offering on-line sample exams for candidates. The Electrical Program is in the process of developing sample exams for all candidates preparing to take administrator and electrician exams. When completed, you will have access to the samples from your home computer for a nominal fee from LaserGrade, our exam delivery contractor.

● NEW WAC PROPOSAL-Junction Boxes Cannot Be Concealed By Attic Insulation

New language in the proposed rules [WAC 296-46B-314(2)] makes it clear that "*Conduit bodies, junction, pull, and outlet boxes must be installed so that the wiring contained in them is accessible without removing any part of the building structure, including insulation material.*" You will have to elevate attic junction boxes that are not accessible from standard openings in the ceiling finish, to a visible location above the level of insulation to be installed in the attic space.

● NEW WAC PROPOSAL For Identification Of Disconnecting Means

The National Electrical Code Article 110.22 (2002 Edition) requires that *"each disconnecting means shall be legibly marked to indicate its purpose unless located and arranged so the purpose is evident*". Proposed rule WAC 296-46B-110 (022) specifies the marking on the disconnect must be an "identification plate." It also requires *"In other than dwelling units, the identification plate must include the identification designation of the circuit source panelboard that supplies the disconnect."* The purpose of marking the disconnect circuit source is to aid maintenance personnel when servicing equipment. Identification plates are described in proposed WAC 296-46B-020 (32).

● Electrical Question of the Month

This Month's Question: According to the 2002 NEC, 15- and 20-ampere, 125- and 250-volt receptacles installed outdoors in a wet location where the product intended to be plugged into it will be attended while in use (e.g., portable tools, etc.) shall have an enclosure that is weatherproof when the attachment plug cap is inserted.

A) True; B) False

Last Month's Question: A generator supplying a legally required standby power system must be capable of restoring power within _____ seconds. A) 10, B) 30, C) 60, D) 90.

● **The answer is: C)** 2002 NEC 701.11

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 5 No. 12** **December 2002**

Update On The 2002 NEC And Electrical Rules (WAC) Adoption Process

The draft rules were presented to the Electrical Board at their October 31st meeting and at a special meeting on December 5th. The board unanimously recommended that the proposed WAC rule move forward in the implementation process with the following qualifications:

- Recommended that the HVAC/R scope of work remain unchanged until further stakeholder meetings to address the HVAC/R scope of work can be held. The department will soon be facilitating meetings to gain agreement on the language for the HVAC/R scope of work. The board directed that the meeting attendees reach agreement by January 17th, 2003;
- Recommended that proposed section WAC 296-46B-925(16), power utility exemption for telecommunications transition boxes, be deleted. The board felt that this type of exemption should be dealt with at the legislative level;
- Strongly recommended that the changes to WAC 296-46B-030 be sent forward. This section provides direction for the department to use international standards when approving "industrial use equipment and control panels;" and
- Strongly recommended that the department develop strong language to address examination applicants who are found to be cheating on an examination.

The target effective date for the new rules, is now mid March-April 2003.

There will be no transition period as allowed in the past. Electrical permits purchased after the WAC effective date will be inspected under the 2002 NEC. Electrical examinations given and plan review projects received after the effective date will be under the 2002 NEC. As soon as it is determined, we will post the exact date in our field offices, this newsletter, and on our list server automatic e-mail notification system.

New Electrical Administrator Renewal Requirements

The passage of Engrossed Senate Bill 6630 changes the renewal requirements for electrical administrators. Electrical administrators who expire **on/after January 1, 2003** will be issued a certificate for 3 years and will be required to have continuing education courses (CEU) in order to renew. The same CEU's can be used for both electrician and electrical administrator renewals. Telecommunications (09) administrator renewals have not changed and will still have the current 2-year certificate with no CEU requirements.

The new fee for electrical administrator renewals (i.e. not telecommunications) will be: $129.15 if payment is received before the expiration date or $258.30 if received within 90 days after the expiration date. Administrators who expire in:

- 2003—must provide 8 hours of National Electrical Code (NEC) update.
- 2004—must provide 16 hours of CEU's including at least 8 hours of NEC update.
- 2005—must provide 24 hours including at least 8 hours of NEC update and 4 hours of RCW 19.28/WAC 296-46B.

NEW NEC Requirements

Motor Disconnect Location—There is a major change in 2002 NEC 430.102 (B). The article states: "*A disconnecting means shall be located in sight from the motor location and the driven machinery location.*" The exception to this rule in the 1999 edition of the NEC allowed the elimination of the disconnect required in 1999 NEC 430-102(b) when the "*disconnecting means for the controller is individually capable of being locked in the open position.*" A lockable disconnecting means ahead of the controller that met the requirements found in 1999 NEC 430-102(a) was the only criteria for the

permission to eliminate the disconnect at the motor. This exception was broad in scope and has been completely rewritten.

The exception in the 2002 NEC 430.102(B) still allows the disconnect to be out of sight but is much more restrictive than the previous code. The new exception requires: "*The provision for locking or adding a lock to the disconnecting means shall be permanently installed on or at the switch or circuit breaker used as the disconnecting means.*" It can only be applied when one of the following is true:

- **It is impracticable, <u>that is impossible</u>, to install it in compliance with 2002 NEC 430.102(B)**. A submersible well pump is an example of when this applies. The adjective impracti<u>able</u> applies to a course of action that is impossible to carry out or put into practice;
- **Installation of the required disconnect would introduce additional or increased hazards to life and property** (e.g. Industrial machinery where orderly shut down is required for safety is an example of when this applies); or
- **In industrial installations, with written safely procedures, where conditions of maintenance and supervision ensure that only qualified persons service the equipment** (e.g. Mills, factories, and manufacturing plants are examples of where this applies). This applies only in industrial installations and requires qualified persons service the equipment. The 2002 NEC defines a "*qualified person*" as "*One who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training on the hazards involved.*"

HVAC/R Equipment Outlet – The 1999 NEC only required the outlet for equipment installed in attics, on rooftops, and in crawl spaces and specifically exempted the outlet requirement for rooftop equipment on one-and two-family dwelling units. The requirement for a receptacle outlet for the servicing of HVAC/R equipment has been significantly modified in the 2002 Code. 2002 NEC 210.63 requires a 125-volt, single phase, 15- or 20-amp receptacle to be installed on the same level as and within 25 feet of all HVAC/R equipment regardless of where the equipment is located. This includes attics, on rooftops, and in crawl spaces on one-and two-family dwelling units previously exempted from the outlet requirement for rooftop equipment.

● Mandatory "Code Update" Continuing Education Courses

In each electrician certification renewal cycle (three years) you must have 24 hours of continuing education with at least 8 hours in the "code update" category. The proposed WAC rule also requires that at least 4 hours of the electrician's 24 hours of CEUs be related to RCW 19.28 and the electrical rules. This requirement ensures that every Washington electrician has exposure to the major changes in each new addition of the NEC and the electrical laws. An Electrical Board committee reviews and approves each course application and outline to determine whether the content merits the hours of CEU credit awarded for completing the course.

Improper reporting of CEU's will result in suspension of the electrician's certificate and revocation or suspension of the sponsor's course approval.

● Electrical Question of the Month

This Month's Question: A generator supplying a legally required standby power system must be capable of restoring power within _____ seconds. A) 10, B) 30, C) 60, D) 90.

Last Month's Question: According to the 2002 NEC, circuit breakers used as switches to control mercury vapor luminaires (lighting fixtures) shall be listed and marked as _____?
A) SWD, B) HID, C) SWD or HID, D) HACR

The answer is: B) Mercury Vapor is a type of high intensity discharge lighting. 2002 NEC 240.83(D) requires that circuit breakers used to switch high intensity discharge luminaires be marked HID. Therefore the correct answer is B) HID.

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 5 No. 11** **November 2002**

● NEW WAC PROPOSAL for Service Conductors—Two-family and Multiple-occupancy Buildings

This is an advance notice of a proposed electrical (WAC) rule change to WAC 296-46A-23040 (will be WAC 296-46B-230 042-Service conductors in the new rules) that will likely modify the design of services on multiple-occupancy buildings. Under the existing rule, a second or additional service drop or lateral on a building is permitted in a separate location if: 1) they are sized per Code, 2) they terminate in metering/service equipment on the units served, 3) they originate from the same transformer, 4) they are properly labeled, and 5) they are separated by a minimum of 15 feet from other service equipment.

Under the new rule (WAC 296-46B-230 040), a second or additional service drop or lateral on a building is permitted in a separate location if: 1) they are sized per Code, 2) they terminate in metering/service equipment, 3) they originate from the same transformer, 4) **no more than six service disconnects may be supplied from a single transformer**, 5) they are properly labeled, and 6) **they may be located anywhere on the building** (no mandatory 15 foot separation).

For example, an eight-unit apartment building would not be able to be served with two "four-pack" meter-main services (8 service disconnects) located on a single building. If a designer wants more than six service disconnects on a structure, then the structure must be divided into separate "buildings" with fire wall separations of a minimum 2-hour rating.

● NEW WAC PROPOSAL for GFCI Protection—Other Than Dwelling Units

A proposed electrical rule change (to be titled WAC 296-46B-210 008B-Other Than Dwelling Units-GFCI Requirements) will place new requirements for GFCI protection in occupancies other than dwelling units. The language is simple: "*For the purposes of NEC 210.8(B), all 125 volt, single phase, 15- and 20-ampere receptacles must have ground-fault circuit-interrupter protection for personnel as required by NEC 210.8(A). Kitchens in other than dwelling units are considered to be any work surface where food and/or beverage preparation occurs and other countertops or islands.*" This means anyplace GFCI protection is required in a dwelling unit (i.e. bathrooms, garages, outdoors, crawl spaces, unfinished basements, kitchens, wet bar sinks, and boathouses), it will be required in a commercial or industrial installation as well. The definition of "kitchens in other than dwelling units" should clarify the specific locations for GFCI protection. This may actually reduce the number of required GFCI receptacles since the 2002 NEC text and many related training programs seem to indicate that all receptacles (under counters, behind equipment, etc.) in commercial kitchens require GFCI protection.

The risk of electrical shock is identical for personnel working on or with the electricity in these (GFCI required) locations, so commercial, industrial, or residential occupancy will no longer be part of the choice the installer may make. This new rule does not supersede any specific requirement for (or exclusion from) GFCI protection in NEC chapter 4-Equipment, chapter 5-Special Occupancies, or chapter 6-Special Equipment.

● NEW WAC PROPOSAL for General Inspection—Siding Before Wiring

There is documented evidence of severe damage to wiring and equipment (i.e. cables, panels, and boxes) when impact nail guns are used to install siding and sheathing after the electrical installation is installed. A proposed rule [WAC 296-46B-101(8) Inspection] will reduce the number of safety problems created by other trades unaware of the damage they might be causing to the electrical installation. Since it may affect the workflow on many construction projects, electrical contractors should make their general contractors aware of the new rule. The new text reads, "*On wood framed structural walls where automated impact nail drivers are used to install the structural sheeting or finish siding, the sheeting and finish siding must be installed prior to installing cable or conduit systems*."

● Scope-of-Work For The HVAC/refrigeration (06A) Specialty—Listed Accessories

This is the seventh time that scope-of-work for the HVAC/refrigeration (06A) specialty has been addressed in this publication. Previous articles have been printed in the February 1999, June 1999, October 1999, December 1999, June 2000, and October 2001 editions. These articles are archived and available at: **http://www.lni.wa.gov/scs/electrical/elc.htm**.

An HVAC/refrigeration (06A) specialty electrician may install listed HVAC and refrigeration equipment accessories, options, and kits in HVAC/refrigeration equipment when the manufacturer's schematic wiring diagram, parts lists, and/or installation instructions show the accessories have been evaluated for use on a specific piece of unit equipment. Typically these approved accessories are items like electric strip heating modules, low-ambient temperature controls, economizer damper assemblies, crankcase heaters, hard-start kits, liquid-line solenoid valves, freeze thermostats, time-delay relays, and electronic air filtering equipment. The allowable work for the 06A specialty does not include any new supply branch circuit, feeder, service, panelboard, or main disconnect modifications that may be necessary due to the addition of the listed accessories.

If the 06A specialty electrician adds any accessory components (as described above) that are not listed for use in the specific equipment modified, then the equipment must be field evaluated by an electrical product testing or field evaluation laboratory accredited in Washington.

● Marking Required For HVAC Equipment

This article was written at the request of our electrical inspectors, so HVAC installers and contractors take notice. We want you to have the opportunity to avoid return trips to make corrections by being aware of <u>all</u> the requirements that may apply to your equipment installation or modification.

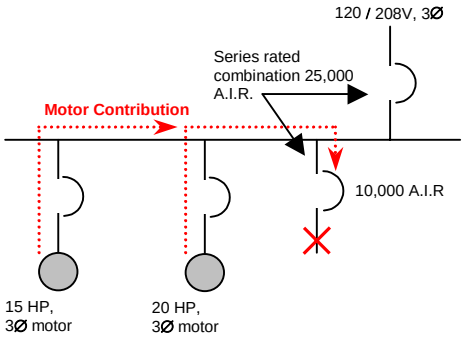
NEC 424-28(A) states, "***Marking Required***. *Each unit of fixed electric space-heating equipment shall be provided with a nameplate giving the identifying name and the normal rating in volts and watts or in volts and amperes*" and "*Electric space-heating equipment intended for use on alternating current only or direct current only shall be marked to so indicate. The marking of equipment consisting of motors over 1/8 hp and other loads shall specify the rating of the motor in volts, amperes, and frequency, <u>and the heating load in volts and watts or in volts and amperes</u>*." Many installers are not marking the nameplate for the size of heating elements installed. Part (B) of the article specifies, "***Location***. *This nameplate shall be located so as to be <u>visible or easily accessible</u> after installation*."

You must do the field marking on the nameplate provided by the manufacturer and identify any electric strip heating modules you have installed or added that are not identified at the factory.

● Electrical Question of the Month

This Month's Question: According to the 2002 NEC, circuit breakers used as switches to control mercury vapor luminaries (lighting fixtures) shall be listed and marked as _____?
A) "SWD", **B)** "HID", **C)** "SWD" or "HID", **D)** "HACR"

Last Month's Question: Last Month's Question: Does the following installation comply with the motor contribution limitations of a series rated system found in NEC 240.86(B)? [2002 NEC]



The answer is: C) No, the total motor contribution is more than 1% of the lower-rated circuit breaker. When power is removed from a motor it will continue to rotate and will actually contribute to the fault current that is available. These motors are connected in the middle of the series rated combination, and are therefore limited to 1% of the lower rated device, which in this case is 100 amps. The total motor contribution from Table 430.150 is 105.4 amps (46.2 amps + 59.2 amps = 105.4 amps)

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 5 No. 10** **October 2002**

● When Will The 2002 National Electrical Code Be Adopted In Washington?

Any new version of the National Electrical Code (NEC) must be adopted through the electrical rules (WAC) process. The last meeting of the combined Licensing/Certification and Technical/Final Roll-up WAC development stakeholder workgroups is scheduled October 3rd in Tumwater. The proposed rule modifications will be presented to the Electrical Board at their October 31st meeting. The public hearings should be conducted in late November or early December. **The "target" effective date for the new rules and the 2002 NEC, is the first week in February 2003**.

The target effective date is so late in the 2002 NEC revision cycle that we will not be able to allow a transition period as we have in the past. Remember, it is not the "bid date" that determines the version of the Code or WAC that applies. All projects for which an electrical work permit is purchased after the WAC effective date will be inspected under the 2002 NEC. All projects received by electrical plan review after the WAC effective date will be reviewed under the 2002 NEC. All electrical examinations given after the WAC effective date will be based on the 2002 NEC.

The actual WAC effective date is thirty days after the Director of Labor and Industries signs the rules. As soon as it is determined, we will let our customers know the exact date in our field offices, this newsletter, and on our list server automatic e-mail notification system.

● How To Join Our List Server Automatic E-mail Notification System

We repeat this announcement often because the benefits of being a subscriber are great when it comes to keeping informed about the electrical industry in Washington. The electrical program has a one-way newsgroup (*Washington State Electrical Program Updates*) that allows all electrical stakeholders to receive automatic e-mail notification of publications, rules, training events, meetings, recruitments, and policy issues. In these e-mail notices, we send new issues of this *ELECTRICAL CURRENTS* newsletter as an attachment (usually in Adobe .PDF format) and hyperlinks to our Web site for most other publications. Subscribers to this service get first notice and immediate access to current versions of the electrical RCW and WAC, policy updates, stakeholder meeting announcements, and other pertinent information from the Electrical Program.

This is the fastest and easiest way for our electrical construction industry stakeholders to receive important current information from us. You enroll (or leave the list) yourself from the computer that you want to receive the e-mail. We do not sell or share your e-mail address with others. We do not retain your e-mail address if you decide to leave the list. We have 1100+ subscribers; we should have 30,000 to 40,000. Please give it a try. Staying in touch with changes in the code, laws, and rules can save you money and effort. New users should go to **http://listserv.wa.gov/archives/electrical.html** and click on **"Join or leave the list"**, then fill in the necessary information to subscribe.

● Ground Rods

Department electrical inspectors are still finding ground rods that have been cut off. The NEC is very specific in the requirement that *"rod and pipe electrodes shall not be less than 8 ft (2.44 m) in length."*

RCW 19.28.111 states: *"It is unlawful for any person, firm, partnership, corporation, or other entity to install or maintain any electrical wiring, appliances, devices, or equipment not in accordance with this chapter*." Cutting off a ground rod is a willful violation of this statute and Electrical Administrators and installers are subject to non-compliance citations for such actions.

NEC 250-52 (c)(3) (1999 edition) requires that ground rods *"be driven to a depth of not less than 8 feet (2.44m) except that, where rock bottom is encountered, the electrode shall be driven at an oblique angle*

not to exceed 45 degrees from the vertical or shall be buried in a trench that is at least 2½ ft. (762mm) deep."

The requirement is that the rod be driven to a depth of 8 feet. If the rod **cannot be driven** then there is a choice of either driving it at a 45-degree angle or laying it in a trench that is not less than 2½ feet deep.

In the 2002 edition of the NEC, this is issue is clarified in Article 250.53(G). This article establishes detailed ground rod installation requirements in the following order or priority. (1) A ground rod must be driven 8 feet (2.44 m) deep, except that; (2) If rock bottom is encountered, it may be driven at a 45-degree angle from vertical, or; (3) If rock bottom is encountered driving the rod at a 45-degree angle from vertical, then (and only then) it can be buried in a 30-inch (750 mm) deep trench.

● New Training Certificates With No "Year" Designation

The typical 1st , 2nd , 3rd , and 4th year electrical training certificates that have been issued since 1974 will soon be obsolete. Engrossed Senate Bill 6630, successful in the 2002 legislative session, established two new electrical specialties and created training changes in some of the existing electrical specialties. New certificates will be issued at the normal renewal date of the existing training certificates.

- Under the new system, there will be a "normally supervised" training certificate for 01 work, and 02, 03, 04, 06, 07, and 07C specialty work that is no different from the previously enforced requirements, except there will be no "1st , 2nd , 3rd , or 4th year" designation on the card.
- A new training status will indicate "100% supervision" is required in the 03A, 06A, 07A, 07B, 07D, and 10 specialties until individuals obtain qualifying experience (720 hours minimum) to take the specialty examination and successfully pass it.
- Trainees that pass the 03A, 06A, 07A, 07B, 07D, or 10 exam will apply for an "unsupervised" training certificate that will allow work (within the proper specialty) without supervision until the full training period (2000 hours minimum) is complete. This certificate is issued once and is not renewable. If the individual has not completed the 2000 hours of experience within 24 months of their initial start of training date, they will revert to "normally supervised" training status.

ESB 6630 also extended the renewal period for electrical training certificates from one year to two years. When the new WAC rules are effective Affidavits of Experience will cover up to two years of work experience and should be submitted at the time of certificate renewal. An additional processing fee will be required when Affidavits of Experience are submitted between renewal periods.

● Electrical Question of the Month

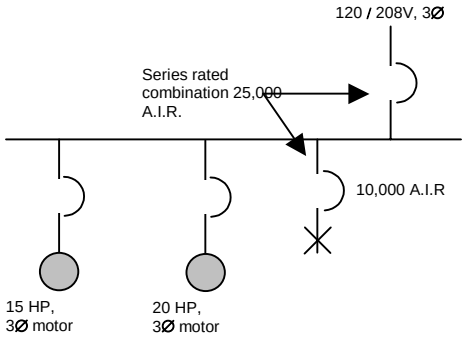
This Month's Question: Does the following installation comply with the motor contribution limitations of a series rated system found in NEC 240.86(B)? [2002 NEC]

A) Yes, the total motor contribution is less then 1% of the lower-rated circuit breaker.

B) Yes, the total motor contribution is less then 1% of the higher-rated overcurrent device.

C) No, the total motor contribution is more then 1% of the lower-rated circuit breaker.

D) No, the total motor contribution is more then 1% of the higher-rated overcurrent device.



Last Month's Question: A bonding jumper not smaller than ____ copper or equivalent shall be connected between the communications grounding electrode and power grounding electrode system at the building or structure served where separate electrodes are used? A) #12, B) #8, C) #6, D) #4. **The answer is: C)** #6 (copper or equivalent) [1999 NEC 800-40(d), 2002 NEC 800.40(D)]

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ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 5 No. 9** **September 2002**

No Electrical Inspections In State Jurisdiction Areas—Tuesday, September 24, 2002

All state electrical inspectors will be attending mandatory training at the Tumwater Labor and Industries Building on September 24th, 2002. In many areas inspections may also be effected on the 23rd and 25th due to travel time to and from Tumwater. We have given all staff training for the last several years in several locations on different dates or done half-day on-line teleconference training in order to minimize impact on inspection services and to minimize travel time loss. However, we now have the opportunity to learn from a nationally recognized expert in improving personal communications skills with customers. We will also use part of the day to hear feedback from a panel of our customers (contractors and other stakeholders) about things that we do well and things we do poorly. We believe the benefits gained by communicating better with our customers makes taking the inspectors out of the field for a day worthwhile.

Space Still Available For 2-Day Code Update Classes

There is still some available stakeholder space for all of the training locations. The training is available to contractors, electricians, trainees, engineers, and any other interested individuals in the electrical industry. The training will cover 2002 National Electrical Code changes and the latest electrical WAC rule changes. The sessions are two consecutive days from 8 AM to 5 PM. You must attend both sessions to obtain any continuing education credit. We will offer **a total of sixteen (16) free hours of electrical continuing education units** (12 hours code update and 4 hours industry related) to all individuals that attend both days of the training.

Oct. 02-03, 2002	Spokane Community College, Lair Building, N 1810 Greene Street, Spokane
Oct. 21-22, 2002	Labor and Industries Building, Auditorium, 7273 Linderson Way SW, Tumwater
Oct. 24-25, 2002	Snohomish County PUD, Auditorium, 2320 California Street, Everett
Oct. 29-30, 2002	West Coast Yakima Center Hotel, 607 E Yakima Avenue, Yakima

The August newsletter announcement allowed registration by postal mail only. **Due to the short time between distribution of this newsletter and the class dates, we will allow additional registration by E-mail**. Interested persons should send E-mail message to LISS235@LNI.WA.GOV and: 1) include your name and E-mail address and, 2) identify the session you want to attend. We will confirm your space by return E-mail. **Space is first-come, first-served and limited**. If you do not receive confirmation before September 25th, do not attend the training.

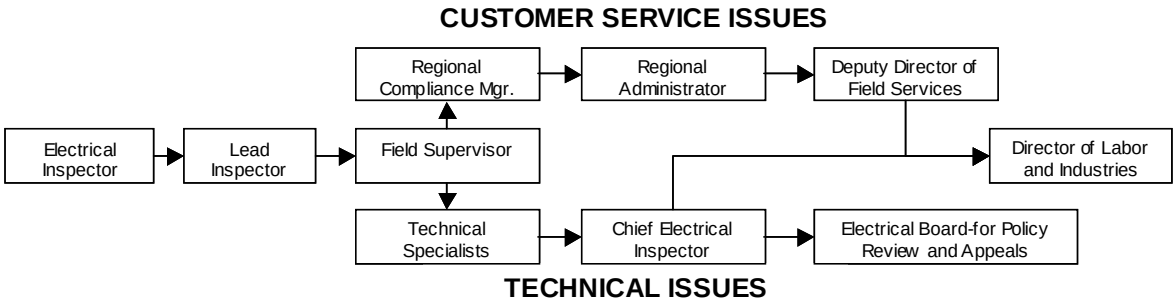
Internet Renewal of Contractor Licenses, and Administrator, Electrician, and Training Certificates—System Now Available On-line as QuickCards

When your contractor license or administrator, electrician, or training certificate is about to expire, you now have the option to renew on-line. You will need to pay the fee with a credit card (debit cards can not be accepted). For your convenience, you may renew up to 90 days prior to the expiration date and your original expiration date remains the same. You may renew up to 90 days after the expiration date, but you will have to pay the (higher) late renewal fee. If your renewal is more than 90 days late, you may not renew on-line and must contact us about retaking your certification exam. You must not have any outstanding, unpaid citations with L&I or a collection agency.

Affidavits of Experience for trainees must be mailed to us after the on-line renewal, course numbers for approved CEU classes must be entered during the on-line renewal, and a current and unimpaired electrical/telecommunications contractors bond or assignment of savings (and valid certificate of insurance for telecommunications contractors) must be on file with the department prior to the on-line renewal. Give the new system a try at: **http://www.lni.wa.gov/QuickCards**.

Customer Service and Technical Chains of Command

Recently the department conducted a workgroup with members of the electrical contracting community. One issue the contractors asked the department to clarify was where concerns and problems should be taken for resolution. Within the department there are two separate "chains of command" as illustrated in the diagram below.



After discussing your issue with the field inspector the next step is always to the lead inspector and electrical inspection field supervisor. If you do not get resolution at this level the supervisor will direct you to the next link in the appropriate chain of command. It is important to contact department personnel in the order shown to allow the department to assist you in a timely manner.

Specialty Exam Development Workgroups

The electrical section recently assembled an exam review workgroup, comprised of professional educators and subject matter experts for the purpose of reviewing all of the current electrical examinations. The department will reconvene this workgroup for the purpose of creating new examinations based on the 2002 NEC. Other workgroups will be formed this fall for the purpose of creating specialty electrical exams. To submit your name for consideration as a subject matter expert for one of these upcoming specialty exam development workgroups please complete, and fax the Electrical Exam Workgroup application to The Department of Labor and Industries at (360) 902-5229.

Committee members will be required to sign a non-disclosure statement, and must have completed or do not intend to take any of the exams that they develop. If you have already responded to the June list server announcement and submitted an application, there will be no need for you to submit another. Applications are available on our web site at: **www.lni.wa.gov/scs/electrical/examdev.pdf**.

Service and Outside Feeder Disconnects

For the purposes of NEC 230-70(a) and NEC 225-32 disconnecting means may be considered to be nearest the point of entrance of conductors when installed within sight and no further than 15 feet from the outside walls of a building. It is important to review all the requirements in WAC 296-46A-22530 and WAC 296-46A-23040 when installing disconnecting means that are not in or on the building but within the 15-foot envelope allowed by WAC.

Electrical Question of the Month

This Month's Question: A bonding jumper not smaller than ____ copper or equivalent shall be connected between the communications grounding electrode and power grounding electrode system at the building or structure served where separate electrodes are used? A) #12, B) #8, C) #6, D) #4

Last Month's Question: The 2002 edition of the NEC will require GFCI devices to trip when the current to ground exceeds the value required for a Class A device to trip. What is the specified trip level for a Class A device? A) 2–4 mA, B) 3–5 mA, C) 4–6 mA, D) 20–30 mA. **The answer is: C)** 4 – 6ma [2002 NEC 100-Definitions. Ground-Fault Circuit Interrupter. FPN: Class A ground-fault circuit interrupters trip when the current to ground has a value in the range of 4 mA to 6 mA.]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 5 No. 8** **August 2002**

● October 2002 NEC Update Training Open To Electrical Stakeholders

The next open inspector training will cover 2002 National Electrical Code changes and the latest electrical WAC rule changes. The sessions are two consecutive days from 8 AM to 5 PM. You must attend both sessions to obtain any continuing education credit. We will offer **a total of sixteen (16) free hours of electrical continuing education units** (12 hours code update and 4 hours industry related) to all individuals that attend both days of the training. The instructors will be from the Labor and Industries electrical section staff. The training dates and locations are below.

Oct. 02-03, 2002	Spokane Community College, Lair Building, N 1810 Greene Street, Spokane
Oct. 21-22, 2002	Labor and Industries Building, Auditorium, 7273 Linderson Way SW, Tumwater
Oct. 24-25, 2002	Snohomish County PUD, Auditorium, 2320 California Street, Everett
Oct. 29-30, 2002	West Coast Yakima Center Hotel, 607 E Yakima Avenue, Yakima

After state, city, and factory assembled structures electrical inspector space is filled, any remaining space in the training sessions will be offered to electrical contractors, administrators, electricians, and other industry stakeholders on a first-come, first-served basis. As a benefit for those who wish to sign up, the announcement with instructions on how to register will be on our list server. (A link for joining the list server is on our Internet home page.)

Any additional space that remains after this initial announcement may be reserved by postal mail only; we will not accept registration by phone, mailed requests will not be accepted prior to September 1. If you want to register for one of the classes, reply by mail to the address below and include: 1) your name, 2) identify the session you want to attend, 3) and give us an address (mail or E-mail, not phone number) to confirm your space by mail or E-mail (your choice). **Space is limited and will be filled on a first-come, first-served basis. If you do not receive confirmation via mail or E-mail by September 25, do not attend the training.** Mail your request to: Department of Labor and Industries, ATTN: Sheila Lisle, P.O. Box 44460, Olympia, WA, 98504-4460.

● Multi-Jurisdictional Equipment?

Certified electricians working for licensed electrical contractors are required for electrical installations. But what about work that spans multiple trades such as gas furnaces, street light poles and gas station canopies?

In most cases an electrical license/certificate is not required to perform work that is related to electrical installations, such as pouring concrete pole bases, welding or assembling steel structures, or operating heavy machinery used to place electrical equipment. If the electrical law does not specifically cover these tasks, we do not require electrical licensing per Chapter 19.28 RCW, WAC 296-46A, and WAC 296-401B. However, if electrical equipment is being installed modified or maintained a licensed electrical contractor with certified electrical personnel must be continuously present and directly involved in the installation (e.g. junction boxes, wiring chases, the sign component, etc.). The following guidelines can be used to help determine the boundary between work requiring electrical licensing under Chapter 19.28 RCW and work only requiring registration under Chapter 18.27 RCW.

Electrical licensing or certification is not required:

1. To clean the non-electrical parts of an electric sign.
2. To form and pour a concrete pole base.

3. To operate heavy machinery to assist an electrician in mounting an electric sign on a building or pole.
4. To operate heavy machinery to assist an electrician in installing a pole that will support and serve as a raceway for an electric sign.
5. To assemble the structural parts of a billboard.

Electrical licensing or certification is required:

1. To install a building mounted electric sign, a pole mounted electric sign, or a pole that will support and serve as a raceway for an electric sign.
2. To install, modify, or maintain a sign face, neon tubing and associated supports for the tubing, or any other part of a listed electric sign.
3. To install conduit or conductors in a concrete pole base, concrete slab, or ditch.
4. To install, modify, or maintain any electrical equipment or conductors on any part of a building.

● Solar Photovoltaic Systems Revisited?

We have recently received inquiries about whether certified limited energy electricians **(06)** are able to install, service or maintain Solar Photovoltaic (PV) Systems.

Limited energy electricians can only service or install the **low voltage portion** of photovoltaic systems that are **rated at or below 30 volts and 1,000 volt-amperes**. Licensed (06) limited energy electrical contractors and certified (06) limited energy electricians are limited to installations of "low voltage" circuits and equipment. WAC 296 46A 92(12) defines "low voltage" as Class1 power limited circuits at 30 volts maximum, and Class 2 and Class 3 circuits per NEC 725. NEC 725-21(a) restricts Class 1 Power-Limited Circuits to a maximum of 1,000 volt-amperes. These restrictions will prohibit the limited energy contractor and (06) electrician from working on all but the smallest systems.

It is also important to note that NEC 690-7(a) computes the maximum system voltage for a PV circuit as the sum of the rated **"open circuit"** voltage of the series-connected PV modules. It is not uncommon for what the industry considers a "12-volt" PV module to have an "open circuit" voltage in excess of 20 volts. In most cases PV modules are connected in series to operate at 24 or 48 volts. Even two of these "12-volt"modules connected in series would exceed the maximum 30-volt limit of "low voltage" circuits.

● Modified Timeline for On-line Renewal of Licenses Certificates

The Electrical Program is in the process of finalizing another convenient tool for electrical contractors, electricians, trainees and administrators. Since May 2002, you have had the ability to renew your electrical certificates and licenses on-line in any of our offices. Scheduled for September 2002, you will have the ability to renew at your home or workplace.
When the final roll-out is made, you will be able to pay for your renewal on the Internet by credit card (unfortunately debit cards will not be accepted) and have a receipt (i.e. temporary certificate/license) printed immediately. This electronic renewal, will allow the department to send you your permanent certificate/license in a much shorter timeframe than the current manual processing method.

● Electrical Question of the Month

This Month's Question: The 2002 edition of the NEC will require GFCI devices to trip when the current to ground exceeds the value required for a class A device to trip. What is the specified trip level for a class A device? A) 2 – 4ma, B) 3 – 5ma, C) 4 – 6ma, D) 20 – 30ma

Last Month's Question: In Washington State a "Low Voltage" Class 1 circuit cannot exceed____volts? A) 12, B) 30, C) 50, D) 600. **The answer is: B) [**WAC 296-46A-092(12) states "Low voltage" means: (a) NEC, Class 1 power limited circuits at 30 volts maximum.]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 5 No. 7** **July 2002**

Space Still Available For Technical Training In Spokane And Yakima Locations Only

Stakeholder registrations from our list server filled the available space in the July 18th and 25th (Tumwater and Everett) technical training sessions within two days of the first announcement. However, there is still stakeholder space available for the **Spokane and Yakima classes**. The training is available to contractors, electricians, trainees, engineers, and any other interested individuals in the electrical industry.

The training will cover Emergency and Standby Power Systems, Health Care Facilities, and Fire Pumps. The instructor will be Bruce Reynolds, the Labor and Industries electrical plan review supervisor. We will offer **eight (8) free hours of electrical continuing education units (CEU's)** to all individuals that attend the training. The sessions are from 8 AM to 5 PM at these locations.

July 30, 2002	West Coast Yakima Center Hotel, 607 E Yakima Avenue, Yakima
August 1, 2002	Spokane Community College, Lair Building, N 1810 Greene Street, Spokane

The first newsletter announcement (June) allowed registration by postal mail only. **Due to the short time between distribution of this newsletter and the class dates, we will allow registration by E-mail**. Interested persons should send an E-mail to LISS235@LNI.WA.GOV and include: 1) your name and E-mail address and, 2) identify the session you want to attend. We will confirm your space by return E-mail. **Space is first-come, first-served and limited**. If you do not receive confirmation before July 26th, do not attend the training.

Kitchen Counter Outlet Spacing

NEC 210-52(c)(1) details small appliance outlet spacing requirements at "wall counter spaces" for kitchen countertops. Where windows are installed less than five inches above the countertop behind a kitchen sink, making it impracticable to install a required outlet(s) in the wall, the required outlet(s) may be relocated as near as possible to the edge of the window. This allowance is currently under review in the WAC development process and does not remove the need for any outlet required by the NEC.

Certificates Will Be Suspended If CEU Courses Cannot Be Verified

The department has begun random audits of CEU class rosters. The audit verifies that electricians have completed the courses listed on their renewal applications. Because of the new "honor system" for reporting CEU's and the new audit process, it is important for all electricians to keep the original copies of their CEU course attendance certificates in a safe place. An electrician's certificate of competency will be suspended if discrepancies are found between the instructor's course roster and the electrician's renewal application. In order to prevent discrepancies, make sure your name, certificate number, and social security number appear fully and legibly on the instructor's class roster.

When improper reporting of CEU's is discovered, a letter will be sent to the electrician informing them of the discrepancy. The electrician will have twenty days to provide copies of the requested class certificates. If the submitted course(s) are false or there is no response after twenty days, the certificate of competency will be suspended and will remain suspended until all CEU requirements are met and the certificate is reinstated. **A suspended electrician can continue to work only if the electrician obtains a training certificate and works under the supervision of an appropriate specialty or journeyman electrician**.

Electricians working or taking continuing education courses outside of Washington still need to include copies of their out-of-state CEU certificates with their Washington certificate renewal applications.

A complete list of approved Washington CEU classes, correspondence courses, and online courses is available on our website at: **http://www.lni.wa.gov/scs/electrical/cehome.htm** and general CEU information at (360) 902-5269 and specific CEU audit information at (360) 902-5284.

● Limitations For A Variance

Variance requests are not intended to offer an alternative to the requirements for equipment and materials found in RCW 19.28.010(1). The purpose of a variance is to allow safe deviation from specific installation requirements of the National Electrical Code (NFPA 70), Revised Code of Washington (RCW 19.28), and Washington Administrative Code (WAC 296-46A). If equipment or materials are not listed/field evaluated or if that equipment is modified in any manner not allowed in the original listing/field evaluation documentation, a variance request is not a permissible means to get it approved. Equipment that is not listed or field evaluated or has been modified must be replaced with properly listed equipment or field evaluated by an approved product-testing laboratory. Note that industrial control panels and equipment may be approved using a special department inspection.

● 48 VDC Power Supplies For Telecom Service Provider's Telephone Equipment

The existing RCW 19.28.151 language "*all electrical wires, apparatus, installations or equipment used or to be used by a telegraph company or a telephone company in the exercise of its functions*" has always been interpreted to include 48 VDC rectifiers and downstream DC conductors in exempt status, as long the installation was "*located outdoors or in a building or buildings used exclusively for that purpose,*" (i.e. a "central office" type of environment).

The existing statutory language dates back to the systems installed prior to 1973. Today "central office" type equipment and functionality is installed, owned, and exclusively controlled by telephone (utility) service providers in dedicated portions of buildings that have other occupancies. NEC 90-2(b)(4) has long exempted telecommunications installations "*located outdoors or in building spaces used exclusively for such installations.*" For decades telephone companies have safely used wiring methods for their 48 VDC power distribution systems that are not addressed by the NEC.

We have received recommendations for rule revision that recognizes the modern structure of telecommunications distribution systems. While the revisions are in progress, details of RCW 19.28.151 will be interpreted more in line with the NEC as follows: "*Building or buildings used exclusively for that purpose*" may mean any separate building or space of a building, where the space is separated from the remainder of the building and used exclusively for telecommunications equipment. The telecommunications equipment within such a space must supply telephone service to other customer's buildings (i.e. The telecommunications equipment cannot solely supply the building containing the dedicated telephone equipment space). Adequate fire-separation from other building occupancies must be reviewed on a case-by-case basis if less than two-hour fire-resistive construction.

● Electrical Question of the Month

This Month's Question: In Washington State a "Low Voltage" Class 1 circuit cannot exceed____volts? A) 12, B) 30, C) 50, D) 600.

Last Month's Question: Electrical products labeled by all Nationally Recognized Testing Laboratories (NRTL) are approved for use in Washington. True or False? **The answer is: False [**RCW 19.28.010(1) states "All materials, devices, appliances, and equipment used…shall be of a type that conforms to applicable standards or be indicated as acceptable by the established standards of any electrical product testing laboratory which is accredited by the department." and WAC 296-46A-092(11) states "Listed means equipment has been listed and identified by a laboratory approved by the state of Washington for the appropriate equipment standard per chapter 296-402A WAC". *Many NRTL labs choose not to do business in Washington and have not made application for approval in Washington. Their label is not valid for electrical installations under state or municipal jurisdiction.*]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 5 No. 6** **June 2002**

● Special Extension Of Temporary Administrator Status

All individuals who have applied for and been issued "temporary administrator" certification (for the law changes affecting telecommunications or the rule changes affecting the 03A, 06, 06A, 07, 07A, 07B, and 10 electrical specialties) **will have the expiration date of the temporary certification extended to December 31, 2002**.

We allow this extension of temporary status with reluctance out of respect to the individuals that put forth intense efforts to meet the original timelines and successfully complete their administrator examinations. However, the disruption of construction schedules, training programs, and contractors' plans caused by the rapid economic downturn in Washington (due to the events of 9/11/01 and economic factors) and the complete overhaul of our electrical examination content, review, and delivery system has resulted in many written requests for additional time to complete this certification process that is essential to maintaining the ability to conduct an electrical contracting business. **There will be no further extensions of these temporary administrator certificates.**

● Electrical Board Recruitment Still Open

Stakeholders in the electrical industry still have the opportunity to make application for positions on the Electrical Board. Members meet quarterly (usually in Tumwater) and provide direction and oversight that is vital to the State of Washington's electrical licensing and inspection program.

Four Electrical Board appointments are scheduled to expire on July 7, 2002. There is one position each representing: licensed electrical contractors, certified electricians, telecommunications utilities, and citizens. Incumbent members and other interested qualified persons may apply for these positions.

The Electrical Advisory Board consists of fourteen (14) members appointed by the Governor for a regular term of four years per member. Representation on the Board includes three electrical contractors, one electrical utility representative, one manufacturer, three certified electricians, one combination electrical/RCDD certified engineer, one general public member, one telecommunications worker, one telecommunications contractor, one telecommunications service provider and one building official (non-voting).

An *Application for Gubernatorial Appointment to a Board or Commission* form is necessary. Requests for copies of the application and any questions may be directed to Angie Wharton at (360) 902-5259 or Rhonnda Jenkins at (360) 902-5572. Applicants should submit a letter of interest, completed application form, and current resume to the office of the Chief Electrical Inspector, PO Box 44460, Olympia, WA 98504-4460, by **no later than July 1, 2002**.

● July/August Inspector Technical Training Open To Electrical Stakeholders

The department provides technical training to our electrical inspection staff and invites municipal inspectors to attend. The next training will cover Emergency and Standby Power Systems, Health Care Facilities, and Fire Pumps. The instructor will be Bruce Reynolds, the Labor and Industries electrical plan review supervisor. We will offer **eight (8) free hours of electrical continuing education units** to all individuals that attend the training. The sessions are from 8 AM to 5 PM at four different locations.

July 18, 2002	Labor and Industries Building, Tumwater, 7273 Linderson Way SW, Tumwater
July 25, 2002	Snohomish County PUD, Administration Building, California Street, Everett
July 30, 2002	West Coast Yakima Center Hotel, 607 E Yakima Avenue, Yakima
August 1, 2002	Spokane Community College, Lair Building, N 1810 Greene Street, Spokane

FULL-from list server registration
FULL-from list server registration

After electrical inspector space is reserved, any remaining space in the training sessions will be offered to electrical contractors, administrators, electricians, and other industry stakeholders on a first-come, first-served basis. As promised at our statewide stakeholder meetings last fall and winter, the announcement with **instructions how to register will be on our list server first.** (For future announcements, see the article that follows for instructions to join the list)

Any additional space that remains after this initial announcement must be reserved by postal mail only, we will not accept registration by phone. If you want to register for one of the classes, reply by mail to the address below and include: 1) your name, 2) identify the session you want to attend, 3) and give us an address (mail or E-mail, not phone number) to confirm your space by mail or E-mail (your choice). **Space is first-come, first-served and limited. If you do not receive confirmation by mail or E-mail before July 10th, do not attend the training.** Mail to: Department of Labor and Industries, ATTN: Sheila Lisle, P.O. Box 44460, Olympia, WA, 98504-4460.

● How To Join Our List Server Automatic E-mail Notification System

The electrical program has a one-way newsgroup (*Electrical News Announcements)* that allows all electrical stakeholders to receive automatic e-mail notification of events and issues. We have the ability to include attachments (usually in Adobe .PDF format) and hyperlinks in these E-mail notices. We are using this service extensively for sending out the *ELECTRICAL CURRENTS* newsletter, and links to current versions of the electrical RCW and WAC, policy updates, stakeholder meeting announcements and other pertinent information from the Electrical Program. This is the fastest and easiest way for our electrical construction industry stakeholders to receive important current information from us. New users should go to **http://listserv.wa.gov/archives/electrical.html** and click on **"Join or leave the list"**, then fill in your e-mail address and name.

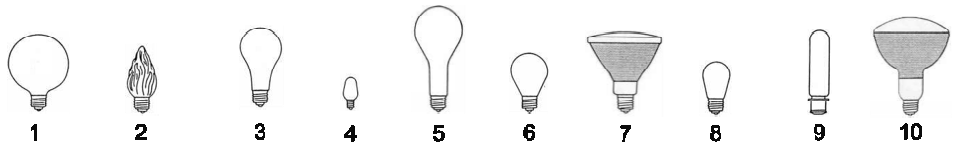
● Small Project Plan Review

WAC 296-46A-140(11) has a provision for allowing small projects to have the electrical plan review done at the local inspection office. The rule states "*When the service or feeder load calculation is affected five percent or less by the addition or alteration of five or less branch circuits, plan review for the branch circuits may be requested from the department's local inspection office. Permission for such small project plan review may be granted at the discretion of the electrical inspection field supervisor, the plans examiner supervisor, or the chief electrical inspector*."

Local review is allowed on the basis that a project involves only minor electrical modifications and the "*five percent or less*" and "*five or less branch circuits*" provisions of the rule are met. When a project falls within these parameters, it does not automatically mean that a local review can be done. The floor plan, one-line, panel schedule(s), and calculations presentation submitted to the local supervisor must be simple, clear, precise, and properly documented. If a local review and approval cannot be completed within a few minutes, then the submittal must go to central office for formal review. The local electrical field supervisor may require formal plan review if the facility loads are close to an overload situation, previous local reviews were done on the facility, or the project is complex.

● Electrical Question of the Month

This Month's Question: Electrical products labeled by all Nationally Recognized Testing Laboratories (NRTL) are approved for use in Washington. True or False?



Last Month's Question: Can you match the lamp type to the lamp picture? **The answer is:**

Type A 3	**Type C 4**	**Type F 2**	**Type G 1**	**Type PAR 7**
Type P 6	**Type PS 5**	**Type R 10**	**Type S 8**	**Type T 9**

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 5 No. 5** **May 2002**

Extension Of Special (Y3) Third-Year Trainee Temporary Status

Since January 18, 2001, (earlier for the 03A, 06A, and 07A specialties) the department has accepted applications to take specialty examinations, based on "grandfathered" work experience in the 03A-Domestic Well, 06-Limited Energy (residential sound only), 06A-HVAC/refrigeration, 07-Nonresidential Maintenance, 07A-Lighting Maintenance, 07B-Residential Maintenance, and 10-Door, Window, Gate, and Similar Systems categories. The special (Y3) third-year training certificates issued to qualifying applicants to serve as temporary certification were to "*be revoked if the individual does not successfully complete the appropriate specialty examination before June 30, 2002*".

We received a great number of applications near the end of the December 31, 2001 deadline and the licensing staff is working on a backlog of incorrect and incomplete applications. Many applicants have not yet received approval to test. We must ensure that all individuals have a reasonable amount of time to successfully complete their specialty electrician examination. We will extend the time that the special (Y3) third-year training certificates will be considered a temporary specialty electrician certificate for the purposes of working within the scope of the appropriate specialty without supervision and for supervising first- and second-year trainees in the proper ratio. **The June 30, 2002 deadline will be extended until December 31, 2002**. Any special (Y3) training certificates that expire during this time must be renewed through the normal process.

Proposed 2.79% Electrical Fee Increase Will Be Effective June 28, 2002

The Office of Financial Management's (OFM) maximum allowable fiscal growth rate factor for fiscal year 2002 is 2.79%. The fee increase is necessary to help offset inflation and maintain the financial health and operational effectiveness of the electrical program. The proposed fee increase applies to all electrical certification and licensing activities as well as electrical inspections. Full copies of the proposed fee changes can be obtained at:

www.lni.wa.gov/rules/Building-Construction/electrical/fees/Electrical.htm

Public hearings will be held:

May 21, 2002, 4 PM	Labor & Industries Building, Room S119, 7273 Linderson Way SW, Tumwater
May 22, 2002, 3 PM	Yakima School District Administration Offices, 104 N. 4th Avenue, Yakima

When the rules are adopted, the new *Electrical Fee Tables* and *Electrical Fee Worksheets* will be available on the electrical web-page under the Electrical Fees link and at L&I offices.

Certification Renewal For Those Eligible To Be New Master Electricians

The new master electrician certification will combine the ability to do hands-on electrical work and the ability to perform the duties of the electrical administrator into a single certificate. The cost of the new single certificate will be equivalent to the annual cost of an administrator certificate, so master electricians will save money.

Individuals who currently have a general (01) administrator certificate and have held a (01) journeyman electrician certificate for four years (or have a specific specialty administrator certificate and have held a matching specialty electrician certificate for two years) will be eligible to receive the master journeyman electrician certificate (or master specialty electrician certificate) without taking an examination.

We will search our electrical database for individuals who meet the qualifications of the new law and are able to "grandfather" the master electrician certification. Starting sometime in mid-summer, persons who qualify will be given the option to become a master electrician when their renewal for either administrator or electrician certification comes due. The opportunity to "grandfather" will continue until June 30, 2005.

● Automotive Lubrication and Service Rooms

In general, lubrication and service rooms have less strict requirements than NEC Article 511—Commercial Garages based on the condition that "*no repair work is done except exchange of parts and routine maintenance requiring no use of electrical equipment, open flame, or the use of volatile flammable liquids.*" Most of these facilities do not require the more expensive classified wiring methods of the NEC, but activities such as changing gasoline fuel filters or otherwise opening up fuel systems for maintenance creates the potential for a hazardous environment. Facilities owners and/or operators, electrical installers, and electrical inspectors should note that if the business offers, advertises, or performs this type of maintenance, the basis for allowing lesser requirements than a standard commercial garage space no longer exists.

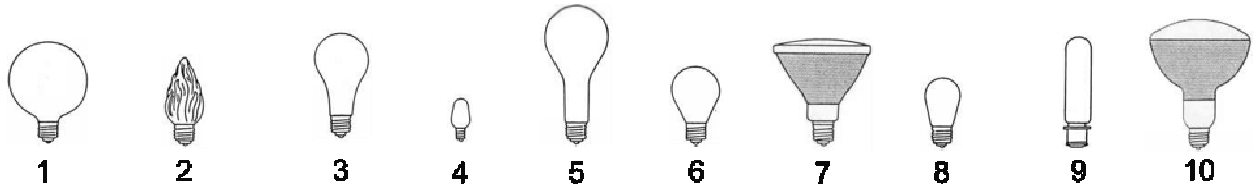
Lubrication and service rooms with pits that can accumulate flammable vapors are the most sensitive areas, and NEC 511-3(b) (exception) states "*Lubrication and service rooms without dispensing shall be classified in accordance with Table 514-2.*" Table 514-2 covers two types of lubrication or service rooms, those with dispensing and those without dispensing. "Dispensing" refers to locations where fuels such as gasoline are transferred to vehicles. The term does not refer to the ability to dispense oil or other non-volatile flammable liquids that are commonly used in this type of facility. Most of these businesses have no "dispensing," however they must install exhaust ventilation in the pit in compliance with the requirements in Table 514-2 in order to make the pit a non-classified location. Crossing the line regarding gasoline fuel system maintenance work clearly changes the character of the business with consideration to the electrical installation requirements.

When a quick-lube facility performs gasoline fuel system maintenance, pits will lose the ability to be non-classified and will be a Class I, Division 1 or Class I, Division 2 location depending on whether or not the "*six air changes per hour*" ventilation requirements of NEC 511-3(b) are met. In such cases, NEC 511-3(a) then covers the floor area around a pit and states, "*the entire area up to a level of 18 in. (457 mm) above the floor shall be considered to be a Class I, Division 2 location.*" If additional ventilation of "*four air changes per* hour" in this area per NEC 511-3(a) (exception) is not provided, the floor area remains classified.

This means that other applicable code articles, such as NEC 511-6, Wiring above Class I Locations, and NEC 511-7, Equipment Above Class I Locations, must be applied. These two articles place restrictions on the wiring methods and equipment, including light fixtures, above the classified location in the lubrication or service room.

● Electrical Question of the Month

This Month's Question: Can you match the lamp type to the lamp picture?



Type A____ **Type C____** **Type F____** **Type G____** **Type PAR____**
Type P____ **Type PS____** **Type R____** **Type S____** **Type T____**

Last Month's Question: What is the length of thermal expansion and contraction expected in a run of rigid non-metallic conduit 25 feet in length when the minimum temperature encountered is minus 5 degrees (F) and the maximum is 110 degrees (F)?
A) No change, B) 1.175 inches, C) 2.15 inches, D) 4.7 inches. **The answer is: B) 1.175 inches**.
[NEC Table 347-9(A), 115 degree temp. change=4.7 inches × (25 feet÷100 feet)=1.175 inches]

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 5 No. 4** **April 2002**

Stakeholder Meetings for 2001

The department is again offering 4 Continuing Education Units (CEU's) for those who attend the meetings and score at least 70% on a take-home examination.

April 16, 2002, 7-9PM	CCS Institute for Extended Learning, Monumental Room, 985 S. Elm St., Colville
April 17, 2002, 7-9PM	Pullman City Hall, Community Center, 325 SE Paradise Street, Pullman
April 18, 2002, 7-9PM	Spokane Community College, Lair-Student Center, 1810 N. Greene St., Spokane

Electrical Compliance Efforts Have Increased Dramatically

The electrical program's compliance efforts are the results of requests from our legitimate industry partners to help them compete on a level playing field against unlicensed contractors and electricians by targeting unlicensed electrical contractors and electricians and the contractors who hire them. We are committed to improving our efforts to eliminate the underground electrical economy and improve safety for consumers and workers.

Adjudicated Citations for unlicensed electrical contractors and uncertified electricians for October, November, and December of 2001:

- 43 Citations – UNLICENSED ELECTRICAL CONTRACTING (Minimum Penalty-$500), $22,500 in total penalties.
- 42 Citations – WORKING AS AN UNCERTIFIED ELECTRICIAN (Minimum Penalty-$100), $4,200 in total penalties.
- 42 Citations – To Administrators/Contractors for HIRING ILLEGAL ELECTRICIANS (Minimum Penalty $100), $8,500 in total penalties.

These citations represent approximately 32% of all penalties assessed during the quarter. This winter, during attempts to increase compliance in the underground economy and improve operating efficiencies, the department committed resources to provide electrical inspectors with specialized electrical compliance classroom training and accompanied job-site visits to enhance inspector's investigative skills. Compliance is a major part of our duties and will continue to be an area of emphasis for the electrical program.

Engine Generator Listing And Labeling

On September 1, 1998 Underwriters Laboratories published the first edition of UL 2200, *Stationary Engine Generator Assemblies*. This standard represents the first formal U.S. national product safety requirements for generators. These requirements cover stationary and fixed generators rated 600 volts or less that are intended for installation and use in ordinary locations in accordance with the National Electrical Code (NEC).

RCW 19.28.010 requires all equipment used in electrical installations to be of a type that conforms to applicable standards or be indicated as acceptable by the established standards of an electrical product testing laboratory that is accredited by the department.

UL 2200 is the standard recognized by the department for the approval of stationary engine generators. The standard has been in effect since 1998 and manufacturers have had adequate time to conform; in fact, hundreds of listed products are available today. **Beginning April 30, 2003, the department will require all engine generators rated 600 volt or less to be listed and labeled (or field evaluated to the standard) by a Washington State accredited electrical products certification laboratory or electrical products evaluation laboratory** (per WAC 296-402A—Electrical Evaluation/Certification Laboratory

Accreditation). This will allow distributors of engine generators adequate time to exhaust any inventory of unlisted equipment prior to the deadline.

● Dwelling Unit General-Use Receptacle And Outlet Branch Circuit Loading

The minimum number of general-use branch circuits in dwelling units is calculated using 3 volt-amperes (VA) per square foot in accordance with 1999 NEC 220-3(a). Once the minimum number of branch circuits is determined, installers must evenly proportion the load among the branch circuits per 1999 NEC 210-11(b). Even distribution may be achieved either by dividing the square footage of the house by the number of required branch circuits or by dividing the number of receptacle and lighting outlets by the required number of branch circuits.

Since the NEC requirement for arc-fault circuit protection (AFCI) of bedroom receptacle outlets became effective January 1, 2002, our inspectors have seen installers attempt to combine all of the bedrooms in large dwelling units on a single branch circuit. The department will not allow installers to unevenly distribute load on bedroom receptacle circuits in violation of 1999 NEC 210-11(b) in order to reduce the number of AFCI devices required.

● Receptacles At Window Seats

1999 National Electrical Code 210-52 (a)(1) states: *"Receptacles shall be installed so that no point along the floor line in any wall space is more than 6 ft (1.83 m), measured horizontally, from an outlet in that wall space. Receptacle outlets shall, in so far as practicable, be spaced equal distances apart."* Receptacle outlets installed in dwelling units in the wall space below an area intended as a built-in window seat can create an unsafe condition when in use. A cord plugged into such a receptacle is subject to being disconnected by a person sitting at the window and could create a tripping hazard.

The department does not consider the space below a window seat as wall space and does <u>not require</u> an outlet below the window seat. However, we will <u>not prohibit</u> the installation of a receptacle(s) in that area. The receptacle spacing requirements for wall spaces begins at the ends of the opening.

● Determining The Proper Wiring Methods For A Specific Building Occupancy

The Authority Having Jurisdiction (AHJ) for electrical inspections is responsible for enforcement of the requirements of the National Electrical Code. Owners, installers, and designers must also work with other AHJ's, such as building officials and fire marshals, to determine the appropriate electrical installation requirements for some building or area occupancies or uses.

Questions regarding use or character of occupancy, occupancy separation, types of construction, fire-resistant materials and construction, and proper classification and boundaries of hazardous locations often require the expertise of building and fire officials. It is essential for both the installer and the electrical inspector to know the proper building (or other area) classification to ensure correct wiring methods and materials are used.

● Code Question of the Month

This month's Code Question: What is the length of thermal expansion and contraction expected in a run of rigid non-metallic conduit 25 feet in length when the minimum temperature encountered is minus 5 degrees (F) and the maximum is 110 degrees (F)?
A) No change, B) 1.175 inches, C) 2.15 inches, D) 4.7 inches.

Last month's Code Question: Overcurrent protection devices are not permitted to be located_____?
A) where exposed to physical damage. B) near easily ignitable materials, such as clothes closets. C) in bathrooms of dwelling units. D) all of these. **The answer is: D) All of these**. **[NEC 240-24**]

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● 2002 WAC Rule Development Workgroups

Governor Locke has signed Engrossed Senate Bill 6630 and the department needs to begin the rule development process to facilitate enforcement of the new additions to chapter 19.28 RCW. We will have two separate workgroups with 12 to 15 active (working) stakeholder members on each. The **"technical"** group will focus on adoption of the new 2002 NEC and related technical changes in WAC 296-46A. The **"licensing and certification"** group will develop language that covers trade/training school program experience for specialties; master electrician criteria; new electrical specialties, scope-of-work, and on-the-job training requirements; and other licensing and certification issues in both WAC 296-46A and WAC 296-401B.

The 12 to 15-person limit for each workgroup is necessary to ensure the ability of the groups to be productive in the limited amount of time we have to complete the work. At all workgroup meetings, working members must have "decision making authority" from the portion of the industry or groups that they represent. Each workgroup will meet (not less than) twice in June, once in July, twice in August, and once in September. If vacation schedules create meeting attendance conflicts, members must have alternates attend with the same ability to make decisions. Active members of the workgroups are expected to communicate workgroup activity to the individuals and organizations they represent. This may involve hosting or attending additional meetings with your constituents.

We will follow the same model that has proved successful in previous WAC rule development cycles. We will host the first organizational meeting where all stakeholders can attend and participate in the selection of active workgroup members to represent various sectors and groups in the electrical industry. If you are willing to devote the substantial time and effort required of the workgroup members, you should start lobbying for the support of others you want to represent and have them endorse your representation at the selection meeting.

The initial open meeting for selection of workgroup members is scheduled for **Monday, May 6, 2002, 1:00 P.M.-4:30 P.M., Main Auditorium, Department of Labor and Industries Building, 7273 Linderson Way SW, Tumwater** (at Exit # 101-Airdustrial Way, off Interstate 5). If you need any additional information, you may call 360-902-5249.

● The Department Is Seeking Stakeholder Input For Proposed Rule Changes

Any stakeholder in the electrical industry may make proposals for additions and/or revisions to the Washington Administrative Code (WAC) electrical rules. **Proposals must be received by July 31, 2002.**

Rules are developed to aid both the stakeholders and department in clarification or enforcement of the intent of the statute. All rule proposals must be based on the responsibility mandated or authority granted to the department in chapter 19.28 Revised Code of Washington (RCW). New rules cannot be drafted simply because an individual feels that "it's a good idea." Technical changes require evidence of a specific problem and substantiation that the proposal will provide a solution.

New proposals should clearly identify original language as "new text." Proposed revisions should include the relevant existing text and should use the legislative format. Use underscore (or underlining) to denote wording to be inserted (e.g. <u>inserted wording</u>) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~).

The form on the back of this page may be copied and used to submit rule proposals for **WAC 296-46A**—*SAFETY STANDARDS—INSTALLING ELECTRIC WIRES AND EQUIPMENT* and/or **WAC 296-401B**—*CERTIFICATION OF COMPETENCY FOR JOURNEYMAN ELECTRICIANS.* A fill-in version of the form will soon be available on our website homepage. Formal proposals must be properly completed and signed by the submitter or they will not be evaluated by the rule revision workgroups. The signed forms must be mailed to Chief Electrical Inspector, P.O. Box 44460, Olympia, WA, 98504-4460 or faxed to (360) 902-5229. We cannot accept e-mailed proposals.

This document is available in alternative formats to accommodate persons with disabilities. For assistance, call 1-800-547-8367. (TDD/TTY users, please call 360-902-5797.) Labor and Industries is an Equal Opportunity employer.

FORM FOR PROPOSALS FOR 2002 WAC RULE CHANGES

Mail to: Chief Electrical Inspector
Department of Labor and Industries
Electrical Section
PO Box 44460
Olympia, WA 98504-4460

Fax to: (360) 902-5229

FOR L&I USE ONLY

Date Received:

NOTES:

1. All proposals must be received by July 31, 2002.
2. Type or print legibly in black ink. Limit each proposal to a single rule section. Use a separate copy for each proposal.
3. Include supplementary material (photographs, diagrams, reports, etc.) if necessary to support your proposal.

Date: _____ **Name:** _____ **Telephone:** _____

Representing: _____

Mailing Address: _____

1. Rule/Section: _____ (Check one): ☐New Text ☐Revised Text ☐Deleted Text

2. Proposal: *Include new or revised wording, or identification of wording to be deleted. Proposed text should be in legislative format. Use underscore to denote wording to be inserted (e.g. inserted wording) and strike-through to denote wording to be deleted (e.g. ~~deleted wording~~).*

3. Statement of Problem & Substantiation for Proposal: *Note: State the problem that will be resolved by your recommendation; give the specific reason for your proposal.*

4. Check one: ☐This proposal is original material ☐This proposal is not original material

5. Signature (required)**:** _____

Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 5 No. 3** **March 2002**

Stakeholder Meetings for 2001

The department is again offering 4 Continuing Education Units (CEU's) for those who attend the meetings and score at least 70% on a take-home examination.

March 21, 2002 1:00-4 PM	OPALCO Office 183 Mt. Baker Road, Eastsound, Orcas
April 16, 2002 7:00-9:00 PM	Community Colleges of Spokane, Institute for Extended Learning 985 S. Elm St., Colville Monumental Room
April 17, 2002 7:00-9 PM	Pullman City Hall, Community Center, Pullman
April 18, 2002 7:00-9 PM	Lair Building Spokane Community College Spokane

ESB 6630

Engrossed Senate Bill 6630 has now passed in the Senate, 43-0, and the House, 96-1, and is awaiting the Governor's signature. This bill will significantly change the current statute (i.e. RCW) requirements for administrators, trainees, and specialty electricians. The following is a highlight of the major changes. Future articles will go into more detail and the implications the bill will have on rule making.

- Administrators, except Telecommunications, will have three-year renewals and be required to have continuing education.
- A Master Journeyman and Master Specialty Electrician certificate is created.
- Trainees have biennial renewal.
- Residential, Pump & Irrigation, Sign, Limited Energy, Nonresidential Maintenance, a new Restricted Nonresidential Maintenance, and all other future commercial specialties will have a minimum 2-year requirement.
- All other specialties, including a new Appliance Repair Specialty, will have a minimum 1-year requirement with the possibility of being elegible to take the exam and work unsupervised after 90 days or more as set by rule. The first 90 days must be worked under 100% supervision.
- Trade/training school credit will be allowed for specialties.

ESB 6630 will dramatically help our industry. The successful passage of this bill is a result of significant work by the entire electrical industry, business and labor, to reach a resolution that works for the entire electrical industry. Many thanks to everyone who dedicated the last year to working together for our industry.

Jobsite Safety

Safety is the foremost reason the Electrical Inspection Program exists. The department is committed to meeting Director Gary Moore's goal to reduce injuries at L&I to zero by January 2006. Electrical inspectors are trained to recognize job site safety hazards and avoid them. Sometimes an inspection cannot be completed until the contractor removes a safety hazard. One example, missing guardrails on stairs and landings, presents a fall hazard that might prevent an inspector from completing an inspection. If you would like help in recognizing hazards on your jobsite, you can receive free consultation and education services from a L&I Safety & Health Consultant at 800-4BE-SAFE or their website: **www.lni.wa.gov/wisha/topics/wisha_consultants.htm**. **HELP US MAKE THE STATE OF WASHINGTON A SAFER PLACE TO WORK AND LIVE.**

Plan Review Process Improvements

In order to reduce review times, Electrical Plan Review is beginning a new pre-review screening process that will reveal any potential (quality control) problems in submitted plans. The new procedures are outlined in an updated Electrical Plan Review Submittal Guide. The new guide has been sent to all firms who submitted 3 or more plans in 2001. The new guide is also available on our web site (address on the footer below) under the **Publications, Forms, & Instructions** (button) link.

The department strongly recommends that designers use the screening process detailed in the submittal guide prior to shipping plans to the department for review. Careful quality control at the designer's office will reduce errors in submitted plans. If the department's screening process reveals multiple or major errors on submitted plans, the plans will be returned to the designer for modification and fees will be charged for the plans examiner's review time. If plans are returned, the plans cannot proceed through the review process and project timelines may be jeopardized. If you have any questions on this new process, feel free to contact Bruce Reynolds, Plan Review Supervisor at (360) 902-5254.

● Electrical Exams Begin at LaserGrade

LaserGrade is now administering all of the State's electrical exams by computer in their 17 statewide locations. The testing sites are open Monday through Saturday.

Administrator exam candidates may schedule exams directly with LaserGrade. When the candidate has successfully completed the exam, they provide proof of a passing score to the department along with an application for administrator certification. Electrician exam candidates must first apply to the department and qualify to take an examination. When they receive an approval letter to test from the department, they may schedule their exam with LaserGrade. LaserGrade will need to see the department's approval letter at the exam center prior to allowing the candidate to test. To schedule an exam, contact LaserGrade at **www.lasergrade.com** or call at 1-800-211-2753.

● Electrical Work Permit Fees for Thermostats

When the "thermostats" category was originally added to the fee schedule all installations were typically Class 2 low voltage circuits that controlled some type of central heating unit, one thermostat per unit. The price break for "additional thermostats" was added to charge a reasonable inspection fee for large structures that needed multiple central heating units each with an associated thermostat (e.g. large houses, multifamily dwellings, strip-malls, and other commercial occupancies). New technology and innovations in heating systems and controls now provide multiple "zone temperature sensors" that give energy efficient temperature control that was not possible on the old systems.

Today it is possible to have a single family dwelling with a central hydronic heating system that has as many as ten Class 2 "zone temperature sensors" that control ten valves in a circulation system manifold. If the permit fee was calculated under WAC 296-46A-910(5)(a) as "first and additional thermostats" this system could have a fee that approaches the fee for the entire line voltage wiring of the house. Since the installation and inspection activity more closely resembles an "energy management and control system," the department will allow these (and similar) limited-energy HVAC control system permit fees to be calculated under WAC 296-46A-910(5)(b) as low-voltage systems based on square footage. Contractors installing this type of control system may choose the calculation method that gives them the lowest fee.

● Common Area Branch Circuits

1999 NEC 210-25 states: "Branch Circuits in dwelling units shall supply only loads within that dwelling unit or loads associated only with that dwelling unit..." In the case of two or more dwelling units sharing a common well, septic, or other system the electrical supply to these systems cannot be fed from an individual dwelling unit. Such a system must be supplied from a separate service. This reduces the likelihood of essential circuits being turned off by an owner or tenant and the water and sewer systems to all dwellings will not be effected by a single owner or tenant whose power is disconnected for any reason.

● Code Question of the Month

This month's Code Question: Overcurrent protection devices are not permitted to be located _____? A) where exposed to physical damage. B) near easily ignitable materials, such as clothes closets. C) in bathrooms of dwelling units. D) all of these.

Last month's Code Question: The cross-sectional area of the conductors permitted in a seal shall not exceed _____ percent of the cross-sectional area of rigid metal conduit, unless the seal is specifically listed for a higher percentage of conductor fill. A) 25, B) 50, C) 100, D) 125. **The answer is: A) [NEC 501-5].**

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 5 No. 2** **February 2002**

Stakeholder Meetings for 2002

The department is again offering 4 Continuing Education Units (CEU's) for those who attend the meetings and score at least 70% on a take-home examination.

April 16 7-9 PM	**Colville** – Community Colleges of Spokane, Institute for Extended Learning, 985 S. Elm St.	April 18 7-9 PM	**Spokane** – Community College, Lair Bldg., 1810 N. Greene St., Spokane, WA.
April 17 7-9 PM	**Pullman** – City Hall-Community Center 325 S. E. Paradise		

Electrical Board Recruitment

Four Electrical Board appointments are scheduled to expire on July 7, 2002. There is one position each representing: licensed electrical contractors, certified electricians, telecommunications utilities, and citizens. Incumbent members and new interested qualified persons may apply for these positions.

The Electrical Advisory Board consists of fourteen (14) members appointed by the Governor for a regular term of four years per member. Representation on the Board includes three electrical contractors, one electrical utility representative, one manufacturer, three certified electricians, one combination electrical/RCDD certified engineer, one general public member, one telecommunications worker, one telecommunications contractor, one telecommunications service provider and one building official (non-voting).

An *Application for Gubernatorial Appointment to a Board or Commission* form is necessary. Requests for copies of the application and any questions may be directed to Angie Wharton at (360) 902-5259 or Rhonnda Jenkins at (360) 902-5572. Applicants should submit a letter of interest, completed application form, and current resume to the office of the Chief Electrical Inspector, PO Box 44460, Olympia, WA 98504-4460, by **no later than April 1, 2002**.

Continuing Education Audits

WAC 296-401B-130(2)(b) requires that individuals seeking renewal of their electrician's certificate of competency provide accurate evidence of at least 8 hours of approved continuing education units (CEU's) for each year of the previous work period. WAC 296-401B-800 and 850 allow the department to issue civil penalties and suspend or revoke an electrician's certificate when false CEU's are claimed on a renewal form.

The Department is commencing random audits of electrician renewals to verify compliance with the CEU requirements. Any electrician providing false CEU statements on electrician renewal forms will be sent a notice of intent to: suspend the certificate for 3 months and issue a civil penalty for submitting false information. Anyone suspended through this process will be required to obtain a trainee certificate to retain the ability to work in the electrical construction industry during the period of suspension. All persons working as a trainee must work under supervision. In order to clear up any discrepancies, anyone who has concerns with the information submitted on their renewal should contact Gerry Jessen at (360) 902-5247.

Move-on Buildings and Structures

RCW 19.28.010(2) states that residential move-on buildings/structures are not subject to "all" the requirements of the RCW so long as the occupancy is not changed and there has not been substantial remodeling as a result of the move. Commercial buildings/structures are not covered in this exemption and are subject to all current wiring requirements.

The exemption in RCW 19.28.010(2) does not preclude an electrical safety inspection of any building/structure. Moved-on residential buildings/structures must meet all National Electrical Code

(NEC) and RCW requirements in place at the time the installed wiring was completed. This means that if a house was wired in 1978, the wiring must met the requirements of the 1978 RCW and the 1978 NEC; this may include listing and labeling of equipment and wiring.

All move-on buildings/structures, residential or commercial, must be inspected prior to connection to electrical power. If the residential building/structure is not in compliance, the person performing the wiring may request relief through the variance process on a case-by-case basis. Variance requests are evaluated to ensure that the minimum levels of safety have been met or mitigated.

● Prefabricated Buildings

Classification, listing, and labeling of a factory structure by a product testing laboratory is not a substitute for field or factory inspection performed by the appropriate Authority Having Jurisdiction (AHJ). The department retains the right to do inspections of prefabricated buildings/structures that will be sited in Washington. Electrical testing laboratories are not approved in Washington to perform inspections or make approvals based on the National Electrical Code (NEC), RCW 19.28 or other building codes.

If open construction methods are used, an electrical work permit must be purchased and inspection, by the electrical inspector, is required to ensure compliance with all of the appropriate standards (e.g. NEC, RCW 19.28 and appropriate WAC rules). The person purchasing the electrical permit will be responsible for the installation of all of the electrical equipment. Permit fees will be based upon the number of services, feeders, and circuits installed per WAC 296-46A-910. Local building authorities are responsible for ensuring compliance with other applicable building codes.

If closed construction methods are used, the structures must comply with all of the requirements of WAC 296-150F – Factory-built Housing and Commercial Structures, including plan review, factory inspections during construction, and proper insignia identification of the approved structures by L&I's Factory Assembled Structures program. Closed construction is when **any** structural element(s) or component(s) is not open for visual inspection. This includes, but is not limited to: electrical, plumbing, HVAC/R, studs, welds, insulation, vapor barriers and fastening devices.

● Fire Pump Installations

NEC Article 695 applies to fire pump installations that are legally **required** by a municipal, county, state, or federal fire protection authority. Such installations must be made using listed equipment in accordance with NEC 695-10. Booster pump/sprinkler systems that are installed voluntarily or installed in one and two family dwellings do not require the use of a listed fire pump or listed fire pump controller and Article 695 does not apply.

The requirements of NEC 430—MOTORS, MOTOR CIRCUITS AND CONTROLLERS relating to overcurrent and overload protection must be met in a "not legally required" voluntary booster pump/sprinkler system. Since fire pump controllers are investigated to ANSI/UL 218 and must allow conductors to carry the locked rotor current of the motor indefinitely, it is unlikely that compliance with NEC 430 can be obtained using listed fire pump controller equipment. Conventional motor control equipment is normally less expensive and more suitable for the intended use.

● Code Question of the Month

This month's Code Question: The cross-sectional area of the conductors permitted in a seal shall not exceed _____ percent of the cross-sectional area of rigid metal conduit, unless the seal is specifically listed for a higher percentage of conductor fill. A) 25, B) 50, C) 100, D) 125

Last month's Code Question: The height of a meter must be? A) 5-7 feet. B) 6 feet to the center of the meter. C) As required by the serving utility. D) Any of the above. **The answer is: C) As required by the serving utility. [WAC 296-46A-23001(3)]**

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Washington State Department of Labor and Industries

ELECTRICAL CURRENTS

Newsletter from the Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 5 No. 1** **January 2002**

Knocking Down Roadblocks and Lowering Hurdles

The Electrical Currents Newsletter was first published in January 1998 to provide code guidance to promote installation and inspection consistency statewide. This is the first addition of the 5th year of the newsletter. We have changed the heading to mark this occasion. We are still providing clear code interpretation but have also expanded the newsletter to include important information regarding other issues relevant to Electrical Contractors and individuals doing electrical work in the State of Washington. This newsletter continues to be a valuable tool in bringing the department and its stakeholders together on issues that might otherwise remain unclear.

During the past year we have accomplished much due to continued efforts by the electrical staff and interested stakeholders who have given of their time and talent to help improve the safety of the citizens of the state and improve the relationship between the department and our customers. Here are some of the accomplishments of 2001.

- Major revisions were made to department forms that simplified them and streamlined processing.
- The department established a database with some 2500 questions for administrator and electrician certification. Beginning February 1, 2002 applicants for the examination will be able to take the appropriate examination electronically at test sites throughout the state.
- Internet Purchase of Electrical Permits (IPEP) system allows contractors to purchase permits over the Internet. This system also allows the contractor to view his Contractor Deposit Account. Contractors using (IPEP) will soon have the ability to use a credit card when purchasing a permit on-line.
- Electrical Inspection Request Service (EIRS) allows 24-hour a day, seven day a week access for contractors to request inspections and view their inspection results on-line.
- Modified the mobile inspection program and completed statewide training of inspectors.
- Trained staff at all service locations statewide via the Internet.
- Worked with industry stakeholders to bring more than 15,000 contractors and electricians into compliance with the electrical statute.
- Worked with industry stakeholders to rewrite WAC 296-46A (Safety Standards-Installing Electrical Wires and Equipment) and WAC 296-403 (Amusement Rides and Structures).

The department extends a special thank you to all the stakeholders who worked along with us to make the WAC rule process so successful.

Electrical Permit Fees

Electrical permit fees were discussed in the November 2001 Electrical Currents newsletter notifying our stakeholders that line items can no longer be added to a permit without charge. Fees for thermostats, low voltage systems, security and fire alarm systems, and signs must be paid for at the rate listed in the fee schedule. Fee training for inspectors and department field services staff will be completed soon and <u>line item fees will be required on permits purchased after January 31, 2002.</u>

Scheduling Examinations for Electricians and Administrators

Effective February 1, 2002 tests for electrical administrators and electricians will be given by **LaserGrade.** Candidates for testing must schedule the day and time of their test directly with **LaserGrade**, <u>not before the last week of January</u>. Scheduling a test can only be done after the candidate has received the department's approval of their application.

<u>All testing done through **Experior** must be completed before February 1, 2002</u>. Any test given by **Experior** after January 31, 2002 will not be accepted as proof of competency. If you are currently

scheduled to take an exam administered by **Experior** after January 31, 2002 you must reschedule testing with **LaserGrade**. Those candidates who have passed any section(s) of the administrator examination will only be required to schedule with **LaserGrade** for those sections of the test not successfully completed.

● More Arc-Fault Circuit-Interrupter (AFCI) Information

Enforcement of 1999 NEC 210-12(b) requiring AFCI protection of dwelling unit bedroom branch circuits supplying 15- and 20-ampere receptacles will apply to electrical work permits purchased after December 31, 2001. When new 15- and 20-ampere circuits supplying dwelling unit bedroom receptacles are installed, **arc-fault circuit breakers** will be required to provide the necessary AFCI protection. For extensions to existing dwelling unit bedroom circuits, the department will allow arc-fault protection provided by feed-through devices or arc-fault circuit breakers. AFCI protection for existing (unaltered) bedroom circuits will not be required for simple panel changes or altered services

● Reporting Trainee Hours

A trainee cannot earn hours in a category out of the scope-of-work of the contractor that they work for. A specialty electrical contractor's classification determines the type of specialty electrician they can dispatch without supervision. If a specialty electrician's certification type is not the same as the contractor's license type, then the individual must have a training certificate and be working under proper supervision. There are two exceptions: A journeyman (01) electrician can work for any type of specialty contractor and a residential (02) specialty electrician can work for a (07B) residential maintenance contractor and do work within the contractor's scope without supervision.

The following is a guide to help contractors and trainees report hours in the proper categories.

Contractor Type	Type of Work Performed	Supervising Electrician	Category of Hours That The Contractor Must Report
01	Commercial/Industrial Construction	01	Commercial/Industrial (01)
	Any specialty work appropriate to the supervising electrician's certification	01 or Any Specialty	Hours itemized in the specific specialty type(s) of work performed.
02	Residential Construction	01, 02	Residential (02)
03	Pump and Irrigation	01, 03	Pump and Irrigation (03)
03 or 03A	Domestic Well	01, 03, 03A	Domestic Well (03A)
04	Sign and Outline Lighting	01, 04	Sign (04)
05	Domestic Appliance	01, 05	Domestic Appliance (05)
06	Limited Energy Systems	01, 06	Limited Energy Systems (06)
06 or 06A	HVAC/R	01, 06, 06A	HVAC/R (06A)
07	Non-Residential Maintenance	01, 07	Non-Residential Maintenance (07)
07 or 07A	Non-Resid. Lighting Maintenance	01, 07, 07A	Non-Resid. Lighting Maintenance (07A)
07 or 07B	Residential Maintenance	01, 02, 07, 07B	Residential Maintenance (07B)
09	Telecommunications	N/A	None—WAC 296-401B-335(4)(c)
10	Door, gate, and Similar Systems	01, 10	Door, Gate, and Similar Systems (10)

● Code Question of the Month

This month's Code Question: The height of a meter must be? A) 5-7 feet. B) 6 feet to the center of the meter. C) As required by the serving utility. D) Any of the above.

Last month's Code Question: The maximum allowable voltage drop for a fire pump at the line terminals of the controller, under motor starting conditions is? A) FPN, only a recommendation. B) 3%. C) 5%. D) 15%. **The answer is: D). [NEC 695-7]**

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Code guidance from the Department of Labor and Industries

Department of LABOR AND INDUSTRIES

ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 4 No. 12** **December 2001**

Enforcement of the Electrical Compliance Laws and Rules

In stakeholder meetings conducted around the state, we hear requests from our legitimate industry partners to help them compete on a "level playing field" by increasing our compliance enforcement. The department is responding in several ways.

- Random compliance stops and jobsites without electrical permits are now included in the agency performance agreement and measured on a monthly scorecard.
- Citations will be automatically generated for trainees and electrical contractors that turn in Affidavits of Experience for working hours when the trainee had an expired training certificate during the timeframe when hours were requested.
- Warning letters will be issued to administrators and firms that receive 3 citations in a year.
- Licensing/certification suspension and revocations will be issued to electrical contractors and administrators that receive 6 citations in 2 years or 9 citations in 3 years.

On-line Renewal of Contractor Licenses and Administrator/Electrician Certificates

The Electrical Program is finalizing the implementation of another convenient tool for electrical contractors, electricians, and administrators. In March 2002, you will have the ability to renew all electrical certificates and licenses on-line in any of our offices. In April 2002, you will have that same ability at your home or workplace.

When the final roll-out is made in April, you will be able to pay for your renewal by credit card and have a receipt (i.e. temporary certificate/license) printed immediately. Your renewal will be completed electronically and you will have your permanent certificate/license in a much shorter timeframe than the current manual processing method.

EMT Compression Type Couplings and Connectors

NEC 348-10 covers the installation of couplings and connectors for Electrical Metallic Tubing (EMT) and requires: *"Couplings and connectors used with tubing shall be made up tight. Where burried in masonry or concrete, they shall be concretetight type. Where installed in wet locations, they shall be of the raintight type."*

NEC 110-3(b) states: *"Listed and labeled equipment shall be installed in accordance with any instructions included in the listing or labeling."*

Not all compression type couplings and connectors are listed as being suitable for raintight and/or conctrete tight applications. Some may be listed "concretetight" but are not suitable for use in wet locations because they are not listed "raintight". Some are not listed for either application.

Installers must always check to be sure the couplings and connectors they are using are installed in compliance with the product listing.

More Information On Changes In Electrician and Administrator Examinations

The department has compiled several thousand electrical exam questions, many donated by electrical trainers and electrical training programs. These questions are being categorized and pooled into our exam database. When *LaserGrade* delivers the examination to a candidate on demand, the questions and sequence of answers have been randomized. It is unlikely that the same exam will be created twice. The results are given the candidate immediately upon completion of the exam. The minimum passing score is 70% correct on any exam section. If the candidate scores from 65% to 69% they may retest in one day, scores from 55% to 64% may retest in one week, and scores less than 55% must wait one month to retest.

The new examinations are all **open book**. Candidates may use <u>any copyrighted reference materials</u> and a silent, nonprinting, nonprogrammable calculator. *LaserGrade* certified proctors monitor all exams.

Fees are based on the length of time reserved for the examination. The cost of a one-hour exam/part is $35 with $10 added for each additional hour. For retests, the fee is based only on the sections to be retested. The journeyman exam is 3 hours and specialty electrician examinations are either 1 or 2 hours. A complete administrator exam consists of 2 to 4 sections taking from 2 to 6 hours total depending on the type of exam. Most administrator sections take 1 hour. *LaserGrade's* fee structure will result in substantially lower exam fees for most of our exam candidates.

● Submersible Well Pump Replacement

The Washington Administrative Code (WAC) 296-46A-900 (11) states: *"As required by chapter 19.28 RCW or this chapter, an electrical work permit is required for the installation, alteration, or maintenance of electrical systems except for: Plug-in appliances, travel trailers, or* ***<u>like-in-kind replacement</u>*** *of a: Circuit breaker, fuse, lamp, snap switch, receptacle outlet, heating element, lighting fixture ballast with an exact same ballast, contactor, relay, timer, starter, similar control component, or motor."*

For the purpose of this section, the department considers submersible pump motor leads as part of the motor assembly where they extend from the motor to the top of the well casing. The department does not require a permit for the replacement of the motor assembly if the voltage and amperage characteristics are similar to the motor assembly being replaced.

The replacement of branch circuit or grounding conductors supplying the top of the well casing is not exempted from permits/inspection. Proper wiring methods and grounding requirements must be verified by inspection.

For additional clarification please consider the following.

- If an existing submersible pump without an equipment grounding conductor is replaced with a new pump having provisions for grounding the motor, an equipment grounding conductor is required to supply the top of the well casing.
    - If an equipment grounding conductor exists at the top of the well casing, to ground the casing to the motor supply system, the replacement pump can be installed without a permit or inspection.
    - If an equipment grounding conductor does not exist at the top of the well casing, to ground the casing to the motor supply system, an equipment grounding conductor must be installed and a permit and inspection is required.
- Installations that require **any** new or replacement wiring outside the well casing require a permit and inspection.
- All wiring changes must be made by: the owner or a properly licensed electrical contractor.
- Removal or placement of a submersible pump motor does not require a permit, licensing, or certification provided the installer only places the pump motor and runs the motor leads no further than the top of the well casing leaving the connection to the branch circuit to owners or licensed and certified installers.

● Code Question of the Month

This month's Code Question: The maximum allowable voltage drop for a fire pump at the line terminals of the controller, under motor starting conditions is? A) FPN, only a recommendation. B) 3%. C) 5%. D) 15%.

Last month's Code Question: Disregarding any exceptions, cable markings on Power-Limited Fire Alarm (PLFA) cables shall comply with which of the following? A.) No voltage marking required, B) No voltage marking permitted, C) 300V marking, D) 600V marking. **The answer is: B). [NEC 760-71(i)]**

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Department of LABOR AND INDUSTRIES

ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 4 No. 11** **November 2001**

Stakeholder Meetings for 2001

The department is again offering 4 Continuing Education Units (CEU's) for those who attend the meetings and successfully complete and score at least 70% on a take-home examination.

Stakeholder Meeting Schedule

Nov. 6, 2001 7-9 PM	Best Inn 901 Berry Road, **Ellensburg**
Nov. 7, 2001 7-9 PM	Labor and Industries Office 3001 W. Broadway Ave., **Moses Lake**
Nov. 8, 2001 7-9 PM	Labor & Industries Office 415 W. Wishkah, Suite 1B, **Aberdeen**
Nov. 15, 2001 7-9 PM	Wash. Mutual Building (Conf. Room) 500 Pacific Ave., **Bremerton**
Nov. 15, 2001 7-9 PM	Yakima School District Offices 104 N 4th Ave, **Yakima**
Nov. 19, 2001 7-9 PM	Douglas County PUD 1151 Valley Mall Pkwy, **E. Wenatchee**
Nov. 20, 2001 7-9 PM	Cowlitz County PUD Building 961 12th, **Longview**
Nov. 20, 2001 7-9 PM	Okanogan PUD 1331 2nd Ave North, **Omak**
Nov. 26, 2001 6:30-9 PM	Benton County PUD 2721 West 10th, **Kennewick**
Nov. 27, 2001 6:30-9 PM	Walla Walla College 306 S.W. 4th Rm. #105, **College Place**
Nov. 28, 2001 7-9 PM	Work Source Building 107 W. Jewett Blvd., **White Salmon**
Nov. 29, 2001 7-9 PM	Clark Public Utilities, Community Room 1200 Fort Vancouver Way, **Vancouver**
Dec. 6, 2001 6:30-9 PM	Port Angeles City Council Chambers 321 E. 5th Street, **Port Angeles**

Changes In Administration Of Electrician and Administrator Examinations

The department has signed a contract with ***LaserGrade*** for computer-based delivery of our electrician and electrical administrator examinations. They have 17 public testing centers in Washington State and over 800 centers nationwide and overseas. Exam candidates will be able to schedule their examinations during regular business hours Monday through Saturday, 52 weeks a year. Results are reported to the candidate immediately upon completion of the examination. Fees are to be based on the length of time reserved for the examination resulting in significant savings for most candidates. We expect to have this option available by February 2002. Currently, candidates may choose to continue with paper-and-pencil examinations from ***Experior***.

Arc-Fault Circuit-Interrupter (AFCI) Requirements for January 1, 2002

Arc-fault protection of dwelling unit bedroom branch circuits supplying 15 and 20 ampere receptacle outlets will be required by 1999 NEC 210-12(b), beginning on January 1, 2002. The department has determined that AFCI receptacles cannot protect the branch circuit as required in this code article. Therefore, AFCI circuit breakers will be required where arc-fault protection is required.

Electrical Permit Fees

We are reevaluating our past business practices in the application of the electrical inspection fees in WAC 296-46A-910. Although there is no basis in statute or rule, past department practice has sometimes allowed the electrical contractor to include thermostats, low voltage security and fire alarm systems, signs and outline lighting systems, and etc. in the permit without added charge. Electrical contractor stakeholders have brought it to our attention that this gives competing electrical contractors an unfair advantage by adding limited energy or sign work to a project at no charge.

We have consulted with internal audit and legal staff about this issue and have determined that allowing this practice is a violation of the statute and rules. We have to charge all permit purchasers for each line item in our fee schedule. However, we will not carry out any changes in permit sales until our field services staff and electrical inspectors have received appropriate training. Implementation will be February 1, 2002.

New Electrical Inspection Program Policies

On October 25, 2001 the Electrical Board approved four new Electrical Inspection Program Policies. These policies have an effective date of October 26, 2001. The full text versions of these policies are available on our website.

- **Policy 01-05** defines a "public area" or "square". (RCW 19.28.091(2)(a) grants a utility exemption for lighting of streets, alleys, ways, or public areas or squares.)
- **Policy 01-06** allows multipoint grounding under limited conditions for circuits with a voltage in excess of 1 KV.
- **Policy 01-07** clarifies the definition of a household-type appliance.
- **Policy 01-08** requires that requests for informal hearings and proceedings from the Electrical Board be submitted at least 30 days prior to the regularly scheduled board meeting.

Package Spa and Hot Tub Installations Outdoors

Since we have recently had numerous questions related to this topic, the following is a reprint of an *ELECTRICAL CURRENTS* article published in July 1999. NEC 680-40 requires that outdoor spas and hot tubs comply with the provisions of Part A and B of Article 680. Part A of NEC 680 applies to all pools, outdoor spas, and outdoor hot tubs. Part B, however, applies only to pools, outdoor spas, and outdoor hot tubs that are permanently installed.

NEC 680-4 defines permanently installed swimming, wading, or therapeutic pool as: Those that are constructed in the ground or partially in the ground, and all others capable of holding water in a depth greater than 42 in. (1.07m). This definition would not include most packaged spas or hot tubs that are set on a slab or patio since they are not in the ground and are typically shallower than 42 inches.

Further clarification is needed on the wiring methods for a feeder that supplies a panelboard installed at a separate building for a pool, spa, or hot tub. The main text of NEC 680-25 (d) requires that the feeder conductors and an insulated equipment grounding conductor shall be installed in rigid metal conduit, intermediate metal conduit, liquidtight flexible nonmetallic conduit, or rigid non metallic conduit and allows the use of EMT where installed on or in the building. NEC 680-25 (d) (2) allows: *"A panelboard at a separate building shall be permitted to supply swimming pool equipment if the feeder meets the* ***requirements for grounding*** *in Section 250-32."* Subsection (d)(2) may allow the feeder to be regrounded at the separate building thus eliminating the need for the insulated equipment grounding conductor but does not exclude the requirement that the feeder conductors are installed in conduit. When the neutral conductor of the feeder is used to ground the panelboard at the separate building it is equally important to protect the neutral as it is to protect a separate equipment grounding conductor.

Governor's Award Presented To The Electrical Licensing Team

The electrical licensing group received the Governor's award for their improvements to streamline the electrical licensing and certification renewal process. The processes the department had in place were inefficient and forms were outdated and confusing, causing errors and delays. A team tackled the task of streamlining the renewal process and redesigning the forms. This improved system has drastically reduced mistakes on submitted forms and reduced phone calls and delays for both customers and staff. The team also eliminated the requirement for notarized signatures on 80% of the forms, saving time for customers and staff. These changes have reduced the renewal backlog from 13 weeks to 3-5 days.

Code Question of the Month

This month's Code Question: Disregarding any exceptions, cable markings on Power-Limited Fire Alarm (PLFA) cables shall comply with which of the following? A) No voltage marking required, B) No voltage marking permitted, C) 300V marking, D) 600V marking.

Last month's Code Question: You run a 20-amp circuit using #4 AWG copper conductors to supply parking lot lighting. The conductor size is increased to prevent voltage drop. What size copper conductor is required for equipment grounding? **The answer is: D) #4 AWG. [NEC 250-122(b)]**

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ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 4 No. 10** **October 2001**

Stakeholder Meetings for 2001

The department is again offering 4 Continuing Education Units (CEU's) for those who attend the meetings and score at least 70% on a take-home examination. After this printing, there may be late October meetings scheduled for E. Wenatchee, Okanogan, and Moses Lake. Check your local office.

Oct. 11, 2001 7-9 PM	Labor & Industries Office 12806 Gateway Drive, **Tukwila**
Oct. 17, 2001 6:30-8:45 PM	Moore Branch Public Library 215 S. 56th Street, **Tacoma**
Oct. 25, 2001 7-9 PM	Bellingham City Council Chambers 311 Grand Avenue, **Bellingham**
Oct. 30, 2001 7-9 PM	Labor & Industries Office 415 W. Wishkah, Suite 1B, **Aberdeen**
Nov. 1, 2001 7-9 PM	Labor & Industries Office 7273 Linderson Way SW, **Tumwater**
Nov. 15, 2001 6:30-9 PM	Wash. Mutual Bldg. (Comm. Room) 500 Pacific Avenue, **Bremerton**
Nov. 20, 2001 7-9 PM	Cowlitz County PUD Building 961 12th, **Longview**
Nov. 28, 2001 7-9 PM	Work Source Building 107 W. Jewett Blvd., **White Salmon**
Nov. 29, 2001 7-9 PM	Clark County PUD Building, Fl 3 1200 Fort Vancouver Way, **Vancouver**
Dec. 6, 2001 6:30-9 PM	Port Angeles City Council Chambers 321 E. 5th Street, **Port Angeles**

Do You Have Any Prevailing Wage Jobs In Progress?

Public-works contractors can now use the Internet to get "Intent" and "Affidavit" forms approved more quickly, speeding up payments. The new electronic-filing service at L&I is expected to reduce to no more than 48 hours the time it takes to process prevailing wage forms. L&I's new service, which uses digital-signature technology, is the agency's latest step to offer e-commerce options. It also marks the first time L&I is offering a service that gives the customer the option to pay fees electronically by credit card. Information on the electronic-filing option and how to use it is available at **www.lni.wa.gov/prevailingwage/pwia**, or the prevailing wage office at (360) 902-5331.

Cord-And-Plug Connected Household Appliances

Since the establishment of the 07B-residential maintenance electrical specialty (that includes appliance repair work), there have been many questions about what work is exempt from the licensing and certification requirements. Installation and maintenance of plug-in household appliances is outside the scope of electrical work covered by the provisions of chapter 19.28 RCW. The department has always considered cord-and-plug connected household appliances that are not covered in the National Electrical Code (NEC) to be in this "exempt" status (e.g. toasters, microwave ovens, TV/video and audio equipment, hair dryers). Appliances that are built-in or part of the infrastructure of most dwellings, and are included in the requirements of the NEC, have not been addressed as consistently.

Cord-and-plug connected household-type: refrigerators and freezers, clothes washers, dryers, ranges, garbage disposals, trash compactors, instant-hot water heaters, dishwashers, etc. **are exempt from electrical licensing and certification requirements**, whether the repair of these plug-in appliances is done on the customer's premises or elsewhere. Household-type appliances are identifiable by their electrical product category listing and labeling. *Note that the department is currently developing a new policy to be presented to the Electrical Board that will propose a definition of a "household-type appliance" independent of the occupancy in which it is installed.*

Many household appliances (e.g. garbage disposals, dishwashers, stoves and ranges, wall-mounted ovens, counter-mounted cook-tops) are installed with permanent wiring methods (hard-wired). Storage-type water heaters, range hoods, exhaust fans, and fixed heating appliances are all hard-wired. **Installation and maintenance of any permanently wired appliance, regardless of occupancy, requires electrical contractor licensing and properly certified installers.** We encourage all members of this industry to take advantage of the current, limited-time opportunity in our rules to "grandfather" previous experience and qualify to become licensed and certified to legally service hard-wired appliances.

More Information On WAC Equipment Ground Fault Protection Requirements

This is a follow-up to the original article published in the March 2001 *ELECTRICAL CURRENTS* newsletter. The article stated, "*Equipment ground fault protection systems required by the NEC must be tested prior to being placed into service to verify proper installation and operation of the system…This test or a subsequent test must include all system feeders*." If you add feeders to existing tested systems with equipment ground fault protection, you must have final testing done on the system.

This "final testing" requirement is to ensure that proper system equipment ground fault protection is not defeated by an unintended re-bonding of a neutral conductor. A complete repeat of the manufacturer's entire performance acceptance test is not required. The neutral resistance (isolation) portion of the test on the conductors of the added feeder(s) must be verified. The "final testing" still must be documented by the original testing firm.

Clarification Of The Scope-Of-Work For Boiler Installers

When the 06A-HVAC/refrigeration limited energy technician electrical specialty was created, the scope-of-work was carefully negotiated with existing (contractor and electrician) electrical industry representatives. The certification is limited to: "*the installation of low-voltage, Class 2 HVAC/refrigeration control circuit cables*" and "*may replace line voltage components within the equipment, only if the components are like-in-kind with similar voltage and current ratings*". Certified 06A installers of residential and commercial boilers must abide by these limitations.

A special case exists for line voltage work done by certified 06A installers of **Field Erected Boiler Assemblies listed under ANSI/UL 2106**. For this specific industrial and commercial equipment, "*within the equipment*" includes the line voltage control devices, pumps and valves that are part of the listed field erected boiler assembly. All line voltage components wired by the 06A installer must be within the footprint of the listed assembly and served by power directly from a listed boiler control panel. The 06A specialty electrician cannot do wiring of any line voltage remote components or circuits of such systems extending outside of the designated boiler space.

Identification Of Power-Limited Fire Alarm Circuits

In addition to the required red-painted enclosures, the special identification of power-limited fire protective signaling circuit conductors required in WAC 296-46A-700(2) is intended for raceway systems with single conductors or for the cable substitutions permitted in NEC 760-61(d). When a listed power limited fire alarm cable (identified FPL, FPLR, or FPLP) is used and the cable jacket identification is legible at each red-painted enclosure, no further marking is necessary.

Equipment Grounds Are Required To Be Made Up At The Time Of Cover Inspection

WAC 296-46A-095(3) states "*…all required equipment grounding conductors installed in concealed raceway, cable, or flexible conduit systems must be completely installed and made up at the time of the rough-in cover inspection.*" This is a change from the old rule that only required the grounds in non-metallic sheathed cable installations to be made up at the time of inspection for cover. The new rule allows the inspector to verify a proper grounding system during the rough-in inspection.

Code Question of the Month

This month's Code Question: You run a 20-amp circuit using #4 AWG copper conductors to supply parking lot lighting. The conductor size is increased to prevent voltage drop. What size copper conductor is required for equipment grounding? A.) #14 AWG, B) #12 AWG, C) #10 AWG, D) #4 AWG.

Last month's Code Question: (General Rule) The minimum horizontal separation from buried underground wiring and the inside wall of a pool is? A) 1 foot, B) 3 feet, C) 5 feet, D) No separation required. **The answer is: C) 5 feet. [NEC 680-10]**

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ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 4 No. 9** **September 2001**

Please Join Our Automatic E-mail Notification System

Since we have had great success with the efficiency of our list server for distributing this newsletter and other information to our customers, we have decided to repeat our previous article to encourage our readers to take advantage of this technology. The electrical fund cannot support the financial costs associated with distributing mailings to all of our contractors, administrators, electricians, trainees, and other industry stakeholders. It is our responsibility to use your electrical fund wisely.

The electrical program has a one-way newsgroup (*Electrical News Announcements)* that allows all electrical stakeholders to receive automatic e-mail notification of events and issues. We now have the ability to include attachments (usually in Adobe .PDF format) and hyperlinks in these e-mail notices. We are using this service extensively for sending out the *ELECTRICAL CURRENTS* newsletter, and links to current versions of the electrical RCW and WAC, policy updates, stakeholder meeting announcements and other pertinent information from the Electrical Program. This is the fastest and easiest way for our electrical construction industry stakeholders to receive important current information from us.

New users should go to **http://listserv.wa.gov/archives/electrical.html** and click on **"join or leave the list (or change settings)"**, then fill in your e-mail address and name. This procedure changed in March 2001 when the list server was upgraded. <u>If you subscribed previously and have **not** received any messages</u>, please go to this website and either modify your information or subscribe again.

Stakeholder Meetings Will Be In The Fall This Year

Stakeholder meetings will begin this year in September and will be completed by January 2002. Meeting dates and times will be posted on our website, e-mailed from the list server, and announced in this newsletter. You may also contact your local Electrical Inspection Field Supervisor to find out when a meeting will be held in your area. Don't miss this opportunity to be informed about legislation, rules, and technical issues. We will continue to sponsor take-home examinations good for 4 continuing education units (CEU's) for individuals that attend and get a score of 70 or better on the exam. It is also a time to voice concerns you may have about the electrical program. Please take the time to attend one of these worthwhile meetings.

Service or Other Masts

As a result of the WAC stakeholdering process a significant change was made to WAC 296-46A-23028. Conduit that extends through a roof and is intended to support overhead drops for service, feeder, or branch circuits may be reduced from the previous 2-inch rigid steel conduit minimum to 1¼-inch rigid steel conduit minimum when supporting conductors not exceeding #1 AWG aluminum or #3 AWG copper. Overhead drops exceeding these conductor sizes are still required to be supported by 2-inch or larger rigid metal conduit.

Conduit used for support of overhead drops must be installed with the methods shown in drawings E-101 through E-103 (and the notes to the drawings) in WAC 296-46A-23028. The inspector may approve alternate methods (to the exact details in the drawings) if they provide equivalent support for the mast. No conductors other than the service laterals are allowed to be supported from the service mast or any service conductors.

Swimming Pool Inspections

The department has recently received several inquiries about how electrical inspections are performed on residential swimming pools. The following is intended to give our customers a general description of what to expect when they have purchased a permit for a swimming pool electrical inspection. These

installations will normally require two inspection visits by the inspector. **It is important to note that this article is not intended to replace your study of NEC Article 680—Swimming pools, Fountains, and Similar Installations before performing any electrical installation for a swimming pool.**

On the first inspection the inspector will check the bonding of all metal pool parts using a #8 or larger solid copper conductor as required by NEC 680-22. Here are some examples:

- Diving boards, ladders, drains, reinforcing steel, and pool cover equipment.
- Metal fences, doors, gutters, window frames, and similar components located within 5 feet horizontally of the inside walls of the pool.
- The exterior bonding termination on a wet-, dry-, or no-niche lighting fixture forming shell.
- Metal pool walls or other structural framing.
- Conduit extending from the forming shell to a deck box.
- An insulated #8 equipment grounding conductor within the raceway between the wet-niche fixture forming shell and the listed swimming pool junction box.
- A listed potting compound encapsulating the equipment ground connection to the inside of the wet-niche fixture forming shell. (Installer should leave the potting compound packaging on site for listing verification.)

If all of the above items are not completed on the first inspection and an additional inspection for cover is required, additional inspection trip fees may be required.

The next inspection is normally the final inspection. This inspection is not limited to, but will include all of the following items:

- Inspection of the pool panel and feeder (ground rods, main breaker retaining clip, grounds and neutrals separated, etc.).
- Verification that the pool bonding conductor is properly terminated on all the pool equipment.
- Ditch inspection of conduits not completed on previous inspection trips.
- Check pool lighting fixture junction boxes to ensure proper equipment grounding conductor terminations and make sure the fixture cord is secured by cable strain relief clamp in the junction box.
- Inspect circuits for insulated equipment grounding conductor, GFCI protection, and proper separation of low voltage and GFCI circuits from line voltage other circuits.
- Verify that a 120-volt 15- or 20-amp GFCI protected receptacle outlet is installed a minimum of 10 feet but not more that 20 feet from the inside wall of the pool.

● Electrical Inspection Fee Due Collection

A recent audit of the outstanding fees due to the department revealed electrical contractors are not being prompt with payment. An electrical fee due notice is an electrical correction. RCW 19.28.101 requires electrical corrections to be made within 15 days. RCW 19.28.161 requires the administrator of an electrical contracting firm to "ensure that all electrical work complies with the electrical installation laws and rules of the state." To avoid a citation and the associated civil penalty, the administrator must ensure that the appropriate fees itemized in the fee due notice are paid within the 15-day time frame.

● Code Question of the Month

This month's Code Question: (General Rule) The minimum horizontal separation from buried underground wiring and the inside wall of a pool is? A) 1 foot, B) 3 feet, C) 5 feet, D) No separation required.

Last month's Code Question: Which of the following can be utilized for the bonding of service equipment? A) Green screw, B) Wire, C) Bus, D) All of the above. **The answer is: D) All of the above. [NEC 250-94; NEC 250-8; NEC 250-102]**

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ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 4 No. 8** **August 2001**

● Stakeholders Work With The Department To Draft Agency Sponsored Legislation

The electrical program is currently working closely with many electrical industry representatives in developing proposed Labor & Industries sponsored legislation for the 2002 session. Some of the provisions of the proposed legislation are:

- It establishes a "master journeyman or master specialty electrician" certification for those individuals that have administrator certification and four years of journeyman electrician certification or two years of specialty electrician certification. These individuals will only have one certificate to renew.
- It establishes the same continuing education requirements for master electricians and electrical administrators that exist today for journeyman and specialty electricians.
- The bill would allow up to one year of work experience credit for individuals that complete an approved community college or trade school training program in one of the electrical specialties. This creates an equitable situation for specialty electrician training programs that already exists for journeyman electrician training programs.
- The bill would allow the minimum work experience requirements for exam eligibility for electrical specialties (other than 02-residential, 03-pump and irrigation, 04-sign, 06-limited energy, or 07-nonresidential maintenance) to be developed in the rule-making (WAC) process, with the approval of the Electrical Board.

● WAC Rule Revision Process: WAC 296-46A and 296-401B are open for proposals.

WAC 296-46A and WAC 296-401B are open for review and revision with public comments and hearings to follow. These rules will remain open until mid-summer of 2002. The official adoption of the 2002 National Electrical Code is a part of this revision cycle. The projected effective date of this rule package is about July 2002.

Revisions must be dedicated to the safety of the electrical industry's customers and the facilities they occupy, or to the safety, competency and accountability of electrical contractors and electrical workers. The rules are developed by the department in conjunction with our stakeholders in order to provide clarity and guidance in enforcement of the intent of the statute. All proposed revisions of the rules must have basis in chapter 19.28 RCW—Electricians and Electrical Installations.

Similar to the format for proposals to modify the National Electrical Code, any proposed rule revisions must include your suggested language. You must also include justification or technical substantiation for any proposed changes. Your formal comments and recommendations can be sent in writing to: **Ron Fuller, Chief Electrical Inspector; Department of Labor and Industries; Rule Revisions; PO Box 44460, Olympia, WA 98504-4460**. Proposals will be collected and evaluated until the closing date is announced in the spring of 2002. Please continue to check for the draft language and public hearing dates that will be scheduled for later this fall on the Electrical Program's website at **www.wa.gov.lni/scs/electrical**.

● Digital Government Applications Academy—Electrician Renewal Project

The Digital Government Applications Academy is a group of information services experts from various state and local agencies working in a cooperative effort to produce software that will utilize current computer technology to provide improved customer services. The Electrical Section has been selected for a pilot project called "Electrician Renewal". The department is working in conjunction with this Department of Information Services (DIS) led group to develop an on-line licensing and certification renewal system. Within the next year, electricians will be able to apply for renewal of their certificate of competency on the Internet. You will enter your renewal application and completed (Washington

approved) continuing education course information on-line, and you will be able to pay the renewal fees on-line. We anticipate this service will be available early in the year 2002.

As our customers have requested, the Electrical Program is continuing work to provide the convenience of today's digital electronic technology services for the electrical industry. Chief Electrical Inspector, Ron Fuller stated, *"This is a huge, huge thing for us. The Academy course gives us a big jumpstart on the project. The timing is perfect, and our project team can take advantage of expertise that is not available internally. The electricians e-license renewal is an ideal candidate for the Academy's design-build project—big impact, cost-efficient and it has a tremendous potential for use in other programs."*

● When can a fourth-year electrical trainee work unsupervised?

There is an industry-wide misconception about when it is permissible for a fourth-year trainee to work without supervision. This status is not automatic. WAC 296-401B-340 establishes a **six-month**, **nonrenewable** fourth-year electrical training certificate that will allow a fourth-year trainee to work unsupervised, providing all the following conditions are met:

- The trainee must make application for the "unsupervised electrical training certificate".
- The trainee must have accumulated over 7000 hours experience while properly supervised.
- The trainee must have successfully completed or be currently enrolled in an approved electrical apprenticeship program or an electrical construction trade program in a school approved by the board of community and technical colleges.
- The trainee must pay all the appropriate fees necessary to take the journeyman electricians exam as found in WAC 296-401B-700.
- The trainee must be working for and continue to work for a licensed electrical contractor that employees at least one certified journeyman or specialty electrician in the appropriate specialty.
- The unsupervised trainee may not supervise other trainees.

This special training certificate is **valid for one six-month period only** and is identified with large block letters across the face saying, "UNSUPERVISED". If trainee fails to pass the exam during this period, then the requirement that they be supervised on a job site is no different than for any other trainee.

● Meter Base Ratings For Dedicated Pump Service Equipment

It is not uncommon for dedicated pump service equipment to be "oversized" relative to the calculated service load in order to accept overcurrent devices that allow the motor and branch-circuit overload protection, motor branch-circuit short-circuit and ground-fault protection, and motor feeder short-circuit and ground-fault protection as permitted by NEC Article 430. Metering equipment for these services needs to be rated of adequate capacity to supply the service "calculated load" according to NEC Article 220. It does not have to match the rating of the "oversized" equipment downstream. Serving utilities should always be consulted regarding metering requirements.

● Residential Septic Systems and the 03-Pump and Irrigation Specialty

Although the language in WAC 296-46A-930(b)(i) does not specifically include these systems, the Chief Electrical Inspector has determined that the **unclassified residential** septic pumping systems described in WAC 296-46A-500 are within the scope-of-work of the 03-Pump and Irrigation electrical specialty. These systems are not included in the scope-of-work for the 03A-Domestic Well specialty.

● Code Question of the Month

This month's Code Question: Which of the following can be utilized for the bonding of service equipment? A) Green screw, B) Wire, C) Bus, D) All of the above

Last month's Code Question: What is the MAXIMUM combined load of two (2) 240-volt fixed-space heaters on a 30-amp branch circuit? **The answer is: (2) 5,760va. [NEC 424-3(b)]**

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Department of LABOR AND INDUSTRIES

ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 4 No. 7** **JULY 2001**

New Fee Schedule Effective Date

Effective June 29, 2001, the fees for electrical inspections were increased by 2.87 %. The new fee schedule is currently on-line at our web site (www.lni.wa.gov/scs/electrical). The new fee schedule covers all electrical inspection activities and the fees for electrical licensing and certification.

Contractors/Electricians Take Notice: Citations, final penalties and inspection fees.

Recently, the department enhanced the electrical database to provide quicker more efficient licensing/certificate processing. As part of this upgrade, the electrical database links all "finaled" citations, inspection, and other fees owed the department to the electrical contractor's license, administrator, or electrician record. Under RCW 19.28, the department has the authority to deny an application or renewal if outstanding fees are owed to the department. Applications or renewals will be denied until all fees and administrative cost are paid.

WAC 296-46A-931/950 and WAC 296-401B-130 allow the department to deny renewal of contractor's licenses, administrator and/or electrician certificates. WAC 296-401B-850 also allows the department to revoke or suspend electrician or trainee certificates for any violation of RCW 19.28.

WAC 296-46A-960 allows the department to revoke or suspend an electrical contractor's license or administrator's certificate when there are serious acts of noncompliance. The department considers the failure to finalize citations and properly complete the purchase of electrical work permits serious. If an electrical contractor or administrator fails to complete their obligation related to fees due they may also be issued citation(s) per WAC 296-46A-920.

The department does not wish to have any contractor or individual lose their license/certificate or be denied the ability to renew their licenses/certificates. All unpaid fees are also sent to our collection department. To avoid such actions, please ensure that all fees due the department are paid in full.

Variance Request

A variance request is used to allow a deviation from specific requirements of the National Electrical Code (NEC) or the Washington Administrative Code (WAC). The request must provide an alternate installation method providing an equivalent measure of safety as required by the NEC, NESC or WAC.

A variance will not be granted if the proposed installation will reduce the overall safety requirements. When variances are granted, they are site and time specific for that particular installation and cannot be applied to future projects.

Revised 15 Foot WAC Rule for Feeders and Service Disconnects

NEC 225-32 and NEC 230-70(a) require the disconnecting means to be located nearest the point of entrance to a building or structure. The revised WAC 296-46A-22530 and WAC 296-465A-23040 (5)(a) allow these disconnect to be located within 15 feet of the building or structure. Variances to the 15-foot rule will not be considered without documentation to support the application.

Multi-Point Grounding of High Voltage Systems

Utilities are turning over utility installed medium/high voltage systems to customers. General electrical contractors are also installing medium/high voltage systems as new installations. The future maintenance and revision of these systems becomes the responsibility of the owner. Using the National Electric Code (NEC) and/or National Electrical Safety Code (NESC), the department or city electrical inspection department is responsible for all inspections for installations not under the control of the utility.

NEC 250-142(b) requires *"…A grounded circuit conductor shall not be used for grounding noncurrent-carrying metal parts of equipment on the load side of the service disconnecting means."* NEC 250-184(b) allows multi-point grounding of the grounded conductor for systems over 1kv only in specific instances (i.e. "The neutral of a solidly ground neutral system shall be permitted to be grounded at more than one point for the following: (1) Services, (2) Direct-buried portions of feeders employing a bare copper neutral, (3) Overhead portions installed outdoor.").

When customer owned existing medium/high voltage systems, installed to utility standards are altered or extended, these systems will be required to be upgraded to meet NEC and WAC requirements. Where the existing medium/high voltage system is not altered or changed in any manner, the existing system will be allowed to remain, unless the system is considered to be unsafe, then it will be required to be replaced with a code compliant installation.

● Ground Rod Length

Electrical Inspectors are finding six-foot and shorter ground rods installed as grounding electrodes. NEC 250-52(c) says, *"Rod and pipe electrodes shall not be less than 8 ft (2.44 m) in length. The electrode must be installed such that at least 8 ft (2.44m) of length is in contact with the soil by being driven to a depth of 8 ft…except where rock bottom is encountered, then the electrode shall be driven at an oblique angle not to exceed 45 degrees from the vertical or buried in a trench at least 2 ½ ft deep."*

The use of short ground rods is considered a flagrant and gross code violation, and the installer will be subject to citations as outlined in WAC 296-46A-920(C) & (D)(12).

● Electrical Plan Review Worksheet

Every project that goes through the formal electrical plan review process has a plan review worksheet created. The worksheet is attached to the front of the approved drawings; a copy is sent with the billing statement to the submitter and a copy is sent to the electrical field supervisor for use by the field inspector. The worksheet has the electrical distribution system outlined item by item. Each line contains equipment sizes, overcurrent devices sizes, conductor sizes, loads in both kva and amps, and the permit fee for that line item. The worksheet along with the plan review notes that are in or outlined in RED on the drawing **must be followed during installation and inspection of the project.** If the field inspector discovers field alternations made to the approved design (e.g. changes to loads, distribution systems, etc), the plans must be resubmitted to the electrical plan review section for approval. It is strongly suggested that this resubmittal not take place at the time of the final electrical inspection, as the review process will hold up final inspection approval.

● Code Question of the Month

This month's Code Question: What is the MAXIMUM combined load of two (2) 240-volt fixed-space heaters on a 30 amp branch circuit? Answer: (1) 3,600va, (2) 5,760va, (3) 7,200va, (4) 9,000va.

Last month's Code Question: The definition of a "Qualified Person," according to NEC-Article 100 is: (A) someone who is familiar with the construction and hazards involved.

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ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 4 No. 6** **June 2001**

● FINAL DEADLINE for "Grand-fathering" Telecom Administrator Certification.

Contractors who were registered on June 8, 2000 under chapter 18.27 RCW and engaged in the business of installing or maintaining telecommunications wiring in Washington may designate certain individuals to receive a telecommunications administrator certificate without examination. The contractor must qualify these individuals for this status when they make the required change from "registered under RCW 18.27" to "licensed under RCW 19.28." **Before July 1, 2001**, the telecommunications contractor and designated administrator applicant(s) must submit a complete telecommunications contractor application and administrator application(s) in order for the administrator designee(s) to be "grandfathered" and receive a telecommunications administrator certificate without examination.

● Required Lighting Outlets in Dwelling Unit Storage or Equipment Spaces

NEC 210-70(a)(3) requires lighting in attics, under floor spaces, utility rooms, and basements when the spaces are used for storage or contain equipment requiring servicing. The spaces under stairs in dwelling units is not considered an under floor space. Lights installed in these areas to facilitate the servicing of equipment must be installed so the equipment is lighted. Lights must be controlled by a switch. The switch may be located on the light, but if the light is located away from the normal point of entry to the area, a switch is also required at that point of entry. If adjacent lighting immediately outside of a stairwell space will provide adequate illumination then the intent of the Code is met and a light is not required inside the stairwell.

● New WAC Requirements for Electrician Renewal

An individual's initial electrician certificate of competency normally requires renewal every three years (review WAC 296-401A-130). The renewal package must provide accurate evidence of at least eight hours of approved CEU's for each year of the certification period including at least eight hours on the latest National Electrical Code changes. If the renewal applicant pays the required fees, but has not completed the required hours of CEU's the **certificate will be placed in an inactive status. When in inactive status, the individual cannot work as a journeyman or specialty electrician.** Any individual wanting to work in the electrical construction trade who is in inactive status must obtain an electrical training certificate and work under the supervision of a certified journeyman or specialty electrician working in their specialty until the required CEU hours is documented to the department.

The department is not responsible for researching CEU history for electricians (review WAC 296-401A-630 & 640). Credit is not allowed for an approved CEU course taken more than once in the renewal period. If the department determines that course sponsors or renewal applicants have filed inaccurate or false CEU's, the department will initiate penalty action as outlined in WAC 296.401B.630. New forms allow the renewal applicant to list Washington approved CEU courses on the renewal form. CEU certificate copies must be submitted with the renewal for out of state courses.

Renewal applicants must pay all outstanding final judgments owed to the department before renewal of any certificate. A certificate of competency that has been suspended by the department may be renewed:

(a) By obtaining and submitting the required hours of CEU's and remaining in suspended status for the duration of the suspension, or

(b) Without the required hours of CEU's and remaining in suspended status for the duration of the suspension. Following the suspension, the certificate will be placed in inactive status as outlined in WAC 296-401B-180, until the required continuing education requirements are met and documented to the department.

● Becoming a Certified Specialty Electrician (Part 2 of 2)

For those individuals with experience in the following specialties: Domestic well (03A), Limited energy (06)-(residential sound experience only), HVAC/refrigeration limited energy system (06A), Nonresidential maintenance (07), Nonresidential lighting maintenance (07A), Residential maintenance (New-07B), and Door, window, gate and similar systems (New-10).

Individuals with **less than two years** of experience may submit an APPLICATION FOR AN ELECTRICAL TRAINING CERTIFICATE and notarized letter from their employer and claim partial credit towards the full exam qualifying experience. They will be issued a standard first or second-year training certificate and their training files will be credited with the hours equivalent to the months of experience that they have claimed. (For example: 18 months of previous experience would qualify the individual for a second-year training certificate. They would need an additional 1000 hours of experience as a certified trainee working under the supervision of someone that had a specialty electrician certificate, or held a "special third-year training certificate", to qualify for the examination.)

After the applicant demonstrates two years of experience, a letter will be sent by the Department instructing them how to contact the exam contractor (Experior). The applicant arranges, directly with Experior, their exam date and location and pays the examination fee. When Experior notifies the department that the applicant has successfully completed the examination, the Department will issue the appropriate specialty electrician certificate. A specialty electrician certificate is valid for thirty-six months.

Until the examination process is completed, qualifying applicants will receive a "special third-year training certificate" that will be considered to be a temporary specialty electrician certificate for the purposes of working without supervision within the scope of the appropriate specialty identified on the certificate. Holders of this certificate will be allowed to supervise first and second year trainees in the proper ratio for work within the scope of work identified on the "special third-year training certificate".

The "special third-year training certificate" is valid for twelve months from the date of issue. If the applicant successfully completes the examination during this time, they will be issued the appropriate specialty electrician certificate. If they fail to pass the examination in the first twelve-month period, they may renew the "special third-year training certificate" by completing another APPLICATION FOR AN ELECTRICAL TRAINING CERTIFICATE and paying the renewal fee *($20.75)*. The second special third-year certificate will be valid no later than June 30, 2002. **If the applicant has not successfully completed the examination by that time, they must renew as a standard second year trainee and work under the supervision of an individual that has passed the examination and holds the appropriate specialty electrician certificate**. The trainee will remain eligible to take the examination and may continue to take the examination until they are successful.

Previous work experience received through this opportunity will not be applicable towards journeyman certification until a trainee successfully completes the specialty electrician examination that the previous experience made possible.

● Code Question of the Month

This month's Code Question: The definition of a "Qualified Person," according to the NEC is: A) one familiar with the construction and hazards involved, B) one with access to hazardous equipment, C) one with a key to the electric room, D) anyone with access.

Last month's Code Question: An examination or treatment chair in a dentist's office is a patient care area and wiring methods installed in a concrete slab to feed this equipment must include an insulated copper equipment grounding conductor along with the branch circuit conductors and be installed in metallic raceway. **The answer is True. [NEC 517-3 Definitions-Patient Care Area, NEC 517-13(a) Patient Care Area, see also *ELECTRICAL CURRENTS* July 1998 and May 1999.]**

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ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 4 No. 5** **May 2001**

Streets, Alleys, Ways, Public Areas and Squares.

For the purpose of licensing and certification exemptions (for electrical utilities and linemen) described in RCW 19.28.091 and WAC 296-46A-935, "streets, alleys, ways, public areas and squares" are those areas owned, controlled, and maintained by a public entity such as a town, city, county, or state. Street lighting work, performed by utilities, in areas that have public access but are owned and controlled by private enterprise (i.e. private driveways and parking lots at churches and retail stores) is not exempt. Utilities may mount lighting fixtures on utility structures (i.e. poles, towers, etc.) that are used solely to support utility equipment and conductors that are supplying power to the customer's "point of contact" whether the structure is on public or private property.

New Requirements for an "Identification Plate" on Certain Equipment.

This article is intended to highlight more of the new electrical WAC technical changes for our customers. The new rules are available on-line at the ***Rules, Policies, & Regulations*** link on our home page. The April 2001 printing of the rules should be available at our field offices by the time you read this newsletter. The rules were effective January 18, 20001 and mandatory April 18, 2001.

WAC 296-46A-092(8) defines an *"**identification plate** as a phenolic or metallic plate or other similar material engraved in block letters at least ¼" (6mm) high unless specifically required to be larger by this chapter, suitable for the environment and application. The letters and the background must be in contrasting colors. Screws, rivets, or methods specifically described in chapter 296-46A WAC must be used to affix an identification plate to the equipment or enclosure"*. Identification plates are intended to hold up to environmental conditions (and painting) and ensure that the equipment remains properly identified for its entire service life. Specific conditions may be set in other sections of WAC 296-46A that provide for other identification requirements.

WAC 296-46A-104(7) Identification of traffic management system components. Local government jurisdictions must use identification plates to identify traffic controller cabinets and system components that they are accepting as approved. Identification plates must meet the requirements in WAC 296-046A-092(8) and 104(7)(b). We will continue to accept the current product identification labels used by WSDOT for equipment and components that the WSDOT approves.

WAC 296-46A-110(2) Identification methods. Where electrical equipment is installed to obtain a series combination rating, the identification as required by Article 110-22 NEC, must be in the form of an identification plate that is substantially yellow in color. The words "CAUTION - SERIES RATED SYSTEM" must be on the label in letters at least ½" (13mm) high.

WAC 296-46A-22530(1) Outside feeders and WAC 296-46A-23040(5) Outside service disconnecting means. Under the specific conditions defined in these articles, outside feeder or service disconnecting means will now be permitted within sight and up to fifteen feet from the building or structure served. These feeder or service disconnecting means must have an identification plate with ½" high letters identifying the building/structure served and the disconnecting means' function as the building/structure main or service disconnect(s).

WAC 296-46A-23040(6) Service conductors. If the service conductors have a lesser ampacity than the overcurrent protection or the equipment rating that they terminate in or on, an identification plate with the ampacity of the conductors must be installed on the equipment. This requirement does not apply to simple dwelling unit services where the allowable conductor ampacity has been increased in compliance with NEC 310-15(b)(6).

WAC 296-46A-700(3) Emergency systems. All boxes and enclosures, including transfer switches, generators, and power panels for emergency systems and circuits must be permanently identified with an identification plate that is substantially red in color. Other types of permanent identification (i.e. box painted orange inside and out) will be acceptable for the identification of emergency receptacle outlets or standard ($4^{11}/_{16}$ inch or smaller) conduit junction boxes if suitable for the environment in which they are installed.

● Becoming a Certified Specialty Electrician (Part 1 of 2)

An individual must complete an APPLICATION FOR AN ELECTRICAL TRAINING CERTIFICATE and pay the appropriate fee *($20.75)*. This certificate must be renewed annually. At renewal, the individual must submit a completed, signed, and notarized AFFIDAVIT OF EXPERIENCE from their employer or apprenticeship training director attesting to number of hours worked in the proper ratio, under supervision by a journeyman or specialty electrician, and in the appropriate electrical specialty work category. When a trainee has completed 4000 hours of experience in a specific specialty, they may apply for that specialty electrician examination. Acceptance of experience from another state or country toward exam eligibility is detailed in WAC 296-46A-420 to 440.

There is an opportunity for individuals with previous work experience, obtained outside of the parameters described above, to qualify this experience toward eligibility for these electrical specialty examinations: Domestic well (03A), Limited energy (06)-(residential sound experience only), HVAC/refrigeration limited energy system (06A), Nonresidential maintenance (07), Nonresidential lighting maintenance (07A), Residential maintenance (New-07B), and Door, window, gate and similar systems (New-10).

From January 18, 2001 to December 31, 2001 only, applications will be accepted if the individual submits all of the following:

- An APPLICATION FOR AN ELECTRICAL TRAINING CERTIFICATE *($20.75)*.
- An APPLICATION FOR ELECTRICIAN EXAMINATION *($69.50)* (Old form name is APPLICATION FOR JOURNEYMAN OR SPECIALTY ELECTRICIAN CERTIFICATE). The fee includes the cost of the first three-year electrician certificate.
- A notarized letter from their previous employer(s) verifying a specific two-year time period that the individual "performed installation, service, maintenance, or repair work" in the appropriate electrical specialty. The employer must have been in the business of the specialty work during the entire verification period and must establish legal business status during this time with copies of their business license or RCW 18.27 contractor registration. Sole proprietors with two years of the above business documentation and experience may verify their own electrical installation experience.

Coincidental experience in more than one specialty, claimed for the same two-year time period, will not be allowed. If individuals have non-coincident time periods of electrical installation experience in more than one of the "open" specialty categories, they must submit a separate training certificate, exam application, and qualifying letter from their employer(s) along with the appropriate fees for each certificate and application.

● Code Question of the Month

This month's Code Question: An examination or treatment chair in a dentist's office is a patient care area and wiring methods installed in a concrete slab to feed this equipment must include an insulated copper equipment grounding conductor along with the branch circuit conductors and be installed in metallic raceway. **True or False?**

Last month's Code Question: Each continuous-duty motor rated at more than ___ hp shall be protected from overload by an approved method (separate motor overload device, integral thermal protective device, etc.). **D. 1 hp [NEC 430-32(a)]**

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ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 4 No. 4** **April 2001**

● FINAL NOTICE—WAC Rules (effective Jan 18, 2001) MANDATORY April 18, 2001

Chapter 296-46A WAC—Safety Standards-Installing Electrical Wires and Equipment-Administrative Rules was effective January 18th. **Contractors and installers have until April 18, 2001 to come into full compliance with these rules.** Until then our electrical inspectors will allow installations to meet requirements as outlined in either the old chapter 296-46 WAC or the new chapter 296-46A WAC, but not a mixture of both. This transition period is intended to give contractors and installers a chance to obtain a copy of the rules and become familiar with all the rule revisions before the department requires full compliance. Published rules are available now on the electrical website.

● Stakeholders Meetings

The department is again offering 4 Continuing Education Units (CEU's) for those who attend the meetings and successfully complete a take-home open book examination.

Stakeholder Meeting Schedule

April 4, 2001	Walla Walla College, Canaday Bldg. #128, **College Place**, WA.	6 PM-8 PM
April 5, 2001	Benton County PUD Auditorium, 10th & Hwy 395, **Kennewick**, WA.	6 PM-8 PM
April 10, 2001	Tukwila Labor & Industries Office, 12806 Gateway Dr., **Tukwila**, WA.	7 PM-9 PM
April 11, 2001	Snohomish Co. PUD Auditorium, 2320 California Street, **Everett**, WA.	7 PM-9 PM

● Automatic E-mail Notification System is Back Up and Running

The electrical program has a one-way newsgroup (*Electrical News Announcements)* that allows all electrical stakeholders to receive automatic e-mail notification of events and issues. We now have the ability to include attachments (usually in Adobe .PDF format) and hyperlinks in these e-mail notices. We will be using this service extensively for sending out the *ELECTRICAL CURRENTS* newsletter, RCW and WAC updates, policy updates, stakeholder meeting announcements and other pertinent information from the Electrical Program. This is the fastest and easiest way for our electrical construction industry stakeholders to receive important current information from us. We have only 380 subscribers today, we would like to have thousands by the end of the year.

How do you become a subscriber?

New users should go to **http://listserv.wa.gov/archives/electrical.html** and click on **"join or leave the list (or change settings)"**, then fill in your e-mail address and name. This procedure changed when the list server was upgraded. If you subscribed previously and have **not** received any messages, please go to this web-site and either modify your information or subscribe again.

● Electrical Board Recruitment Extended

Three Electrical Board appointments are scheduled to expire on July 7, 2001. The positions represent combination electrical/RCDD certified engineers, certified electricians, and telecommunications workers. Incumbent members and new interested qualified persons may apply for these positions. See the March 2001 *ELECTRICAL CURRENTS* for more information or contact Angie Wharton at (360) 902-5259 or Rhonnda Jenkins at (360) 902-5572. Applicants should submit a letter of interest, completed application form, and current resume to the office of the Chief Electrical Inspector, PO Box 44460, Olympia, WA 98504-4460, no later than May 31, 2001.

● Becoming a Licensed Electrical Contractor

Every electrical contractor must complete an application and pay the appropriate fee *($216.25 for a two-year license period)*, must have a $4,000 contractor's surety bond or assignment-of-savings account agreement with the department, and must assign a certified administrator with the appropriate specialty certificate. The administrator must be an owner/member of the firm or a full-time supervisory employee. An individual with administrator certification may only be assigned to one company at any given time. A certified electrical administrator may not perform "hands-on" electrical work unless they also have electrician certification.

There is an opportunity for unlicensed firms, doing work described in WAC 296-46A-930 as Domestic well (03A), Limited energy (06)-(residential sound only), HVAC/refrigeration limited energy system (06A), Nonresidential maintenance (07), Nonresidential lighting maintenance (07A), Residential maintenance (New-07B), and Door, window, gate and similar systems (New-10), to come into compliance with the electrical contracting law. Until December 31, 2001, these firms can appoint a temporary electrical administrator when applying for their initial electrical contractor license. This temporary administrator must be named as the **Designated Administrator** on the APPLICATION FOR ELECTRICAL CONTRACTOR'S LICENSE.

The complete contractor's application packet must include:

- APPLICATION FOR ELECTRICAL CONTRACTOR'S LICENSE *($216.25-for two years)*
- A TRANSFER OF ADMINISTRATOR'S CERTIFICATE form (new form name is: ASSIGNMENT OF ADMINISTRATOR'S CERTIFICATE) *(No fee for first assignment)*
- An APPLICATION FOR ADMINISTRATOR'S EXAMINATION *($91.50)*. The fee includes the cost of the first two-year administrator certificate.

When the application is accepted, the temporary administrator will be mailed a letter that gives them a temporary certificate number and instructs them how to contact the exam contractor (EXPERIOR). The temporary certificate is valid for twelve months after submitting the application. The applicant arranges their exam date and location and pays the examination fee *($64.75 initial, $75.75 re-test)* directly to EXPERIOR. When EXPERIOR notifies the department that the applicant successfully completed the examination, we issue the two-year certificate. If the applicant fails to complete the exam in twelve months, the certificate expires and the contractor has 90 days to assign another full-time administrator (that has a valid certificate) to the company.

A test outline for the appropriate specialty administrator examination is provided to the applicant along with the notification letter verifying exam eligibility and assigning a temporary administrator certificate number. These outlines are also available on our website at: **www.lni.wa.gov/scs/electrical/testout.htm.**

● Continuing Education Course (CEU's) Approval Update

Effective immediately, the department will only accept CEU's for courses that are approved prior to attending. There will be no exceptions. Individuals attending classes that are pending approval by the department will not receive CEU credit even though the classes may receive approval at a later date. It is important that all providers of electrical trade related courses, have their new classes or renewal of classes in and approved prior to their class start date. The effective date of the class will be the date we complete the approval process**.**

● Code Question of the Month

This month's Code Question: Each continuous-duty motor rated at more than ___ hp shall be protected from overload by an approved method (separate motor overload device, integral thermal protective device, etc.). **A.** ¼ **B.** ½ **C.** ¾ **D.** 1 ?

Last month's Code Question: Arc-fault circuit-interrupters (AFCI) are required in dwelling unit bedrooms as of? **C. January 1, 2002. [NEC 210-12(B)]**

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ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 4 No. 3** **March 2001**

Stakeholders Meetings

The department is again offering 4 Continuing Education Units credit (CEU's) for those who attend the meetings and successfully complete a take-home examination.

Stakeholder Meeting Schedule

March 20, 2001 6 PM-8 PM	Douglas County PUD 1151 Valley Mall Pkwy, **E. Wenatchee**	April 4, 2001 6 PM-8 PM	Walla Walla College Canaday Bldg. #128, **Walla Walla**
March 21, 2001 6 PM-8 PM	Okanogan County PUD 1331 2nd Ave N., **Okanogan**	April 5, 2001 6 PM-8 PM	Benton County PUD 10th & Hwy 395, **Kennewick**
March 27,2001 6 PM-8 PM	Yakima School Dist. Administration 104 North 4th Avenue, **Yakima**	April 10, 2001 7 PM- 9 PM	L&I Office 12806 Gateway Dr, **Tukwila**
March 28, 2001 6 PM-8 PM	Ellensburg Best Inn 901 Berry Road, **Ellensburg**	April 11, 2001 7 PM- 9 PM	Everett – Snohomish Co PUD 2320 California St, **Everett**
March 29, 2001 6 PM-8 PM	Moses Lake L&I Office 3001 West Broadway, **Moses Lake**		

2ND NOTICE: New WAC rules effective January 18, 2001

Chapter 296-46A WAC—Safety Standards-Installing Electrical Wires and Equipment-Administrative Rules was **effective January 18th**. Contractors and installers have until April 18, 2001 to come into full compliance with these rules. Until then our electrical inspectors will allow installations to meet requirements as outlined in either the old chapter 296-46 WAC or the new chapter 296-46A WAC, not a mixture of both. This transition period is intended to give contractors and installers a chance to obtain a printed copy of the rules and become familiar with all the law and rule revisions before the department requires full compliance. Published rules are available now on the electrical website. Printed publications will be available later this month.

Chapter 296-401B WAC—Certification of Competency for Journeyman Electricians was also effective January 18, 2001. There is no transition period for compliance with WAC 296-401B. This chapter of the WAC has transition periods defined within the rule.

New WAC Rule on Equipment Ground Fault Protection Systems

This is the first article in a series intended to remind our readers of the technical changes made to the electrical WAC rules. WAC 296-46A-215 and 23062 both state: "*Equipment ground fault protection systems required by the NEC must be tested prior to being placed into service to verify proper installation and operation of the system…This test or a subsequent test must include all system feeders*." If you have this test done on only a portion of the system, it must be repeated once the entire feeder system is in place. If you add feeders to existing systems with equipment ground fault protection, you must have final testing done on the system. You should incorporate the "system shut-down" necessary to perform the final testing into your construction plans. Further details on testing procedures and required documentation are in the specific rules.

Contracting in Washington—Basic Requirements

Two statutes regulate all construction contracting in Washington. **Chapter 18.27 RCW—Registration of Contractors** is a consumer protection law that covers "registered" general construction contractors and 60+ different construction contracting specialties. **Chapter 19.28 RCW—Electricians and Electrical Installations** is a public safety law that covers "licensed" general electrical contracting, 11 different

electrical contracting specialties, and telecommunications contracting. There is no crossover of the scope-of-work and responsibilities of these two distinct contracting entities. If you provide services that are under the jurisdiction of each of the two contracting laws, then you must become a contractor under both laws and obtain a contractor's surety bond for each.

Effective June 8, 2000 the jurisdiction for telecommunications work on customer premises (the customer side of the network demarcation point) was removed from chapter 18.27 RCW and placed under chapter 19.28 RCW. All firms doing this work are required to be "licensed" telecommunications contractors under chapter 19.28 RCW today.

Effective January 18, 2001 with the revisions to chapter 296-46A WAC and chapter 296-401B WAC, all firms doing **residential sound** wiring installations, **electric gate, door, and similar systems** installations, and firms contracting **nonresidential or residential electrical maintenance** work for property owners must be "licensed" as specialty electrical contractors. This is required due to the electrical board and department's revocation of several existing "illegal" policies and practices and the development of regulations in the WAC that are consistent with the contractor licensing and electrician certification requirements of chapter 19.28 RCW.

The department worked extensively with various stakeholder groups to develop rules and procedures that will allow firms and workers performing these installations an opportunity and path to come in to compliance with the Electricians and Electrical Installations law. This opportunity will be available until December 31, 2001. (The **domestic well**, **HVAC/refrigeration limited energy**, and **nonresidential lighting maintenance** specialties will also be open during this time.) Full compliance with the law has two separate parts: 1) becoming an electrical or telecommunications contractor requires contractor licensing/administrator certification and, 2) doing "hands-on" electrical work requires specialty electrician/electrical trainee certification. We will detail these items in future issues of this newsletter.

● Meter /Mast Repair and or Replacement Fee

WAC 296-46-910(1)(c)(ii) and 296-46-910(2)(b) set the fees for the maintenance/repair of a meter/mast (no alteration to the service or feeder) at $33.50 for residential and $61.50 for commercial repairs. This subsection's lower fees are intended to cover the inspection cost for wind, weather, vehicular, meter terminal failure, or other damage to existing meter/mast systems. Work includes the replacement or repair of the meter, mast, and/or conductors up to the first point of termination on the service or building disconnecting means. Any <u>relocation of the mast or meter and overhead/underground conversions must be permitted as altered services.</u>

● Electrical Board Recruitment

Three Electrical Board appointments are scheduled to expire on July 7, 2001. The positions represent combination electrical/RCDD certified engineers, certified electricians, and telecommunications workers. Incumbent members and new interested qualified persons may apply for these positions.

See the February 2001 *ELECTRICAL CURRENTS* for more information or contact Angie Wharton at (360) 902-5259 or Rhonnda Jenkins at (360) 902-5572. Applicants should submit a letter of interest, completed application form, and current resume to the office of the Chief Electrical Inspector, PO Box 44460, Olympia, WA 98504-4460, by no **later than April 1, 2001.**

● Code Question of the Month

This month's Code Question: Arc-fault circuit-interrupters (AFCI) are required in dwelling unit bedrooms as of? **A**. Date the State of Washington adopted the 1999 code. **B**. July 1, 2001 **C.** January 1, 2002. **D.** When the State of Washington adopts the 2002 code.

Last month's Code Question: *(The source of power for a 1999 NEC Article 700 Emergency System may be a tap ahead of the main service disconnect.)* The answer is: False NEC 700-12 no longer includes a tap ahead of the main disconnect as an acceptable option.

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Code guidance from the Department of Labor and Industries

Department of Labor and Industries

ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 4 No. 2** **February 2001**

NEW WAC RULES EFFECTIVE JANUARY 18, 2001

Chapter 296-46A WAC—Safety Standards-Installing Electrical Wires and Equipment-Administrative Rules was effective January 18th. The department is allowing a 90-day transition period for compliance with this chapter. Contractors and installers have until April 18, 2001 to come into full compliance with these rules. Until then our electrical inspectors will allow installations to meet requirements as outlined in either the old chapter 296-46 WAC or the new chapter 296-46A WAC, not a mixture of both. This transition period is intended to give contractors and installers a chance to obtain a printed copy of the rules and become familiar with all the law and rule revisions before the department requires full compliance. Published rules are available now on the electrical website. Printed publications will be available about March 1.

Chapter 296-401B WAC—Certification of Competency for Journeyman Electricians was also effective January 18, 2001. There is no transition period for compliance with WAC 296-401B. This chapter of the WAC has transition periods defined within the rule.

Stakeholders Meetings

The department is again offering 4 Continuing Education Units credit (CEU's) for those who attend the meetings and successfully complete a take-home examination.

Stakeholder Meeting Schedule

Feb 15, 2001	Port Angeles City Council Chambers 321 E 5th Street, **Port Angeles**, WA	6:30 PM-8:30 PM
Feb 20, 2001	Skagit Valley College, Angst Hall-Room 22 2405 E College Way, **Mount Vernon**, WA	7:00 PM-9:00 PM
Feb 21, 2001	Bellingham City Council Chambers 311 Grand Avenue, **Bellingham**, WA	7:00 PM-9:00 PM

Additional stakeholder meetings are being planned for the month of March in **Okanogan**, **Wenatchee**, **Moses Lake**, **Kennewick**, **Walla Walla**, **Ellensburg**, and **Yakima**. Dates and times of these meetings will be announced in the March issue of this newsletter and you can contact the local L&I offices for this information.

New Internet Address for the Electrical Section Home Page

Effective January 31, 2001, our network administrators changed our Internet address to:

www.lni.wa.gov/scs/electrical

Please update this address in any browser "bookmarks" or "favorites" that you have saved. We use this resource as our first-line of communications of information important to our customers.

Electrical Board Recruitment

The Electrical Advisory Board consists of fourteen (14) members appointed by the Governor for a regular term of four years per member. Representation on the Board includes three electrical contractors, one electrical utility representative, one manufacturer, three certified electricians, one combination electrical/RCDD certified engineer, one general public member, one telecommunications worker, one telecommunications contractor, one telecommunications service provider and one building official (non-voting).

At the present time, three Electrical Board appointments are scheduled to expire on July 7, 2001. One position represents combination electrical/RCDD certified engineers, one represents certified electricians, and the other represents the telecommunications workers. Incumbent members may apply for reappointment to their positions, and new, interested, qualified persons may also apply for these three positions.

An *Application for Gubernatorial Appointment to a Board or Commission* form is necessary. Requests for copies of the application and any questions may be directed to Angie Wharton at (360) 902-5259 or Rhonnda Jenkins at (360) 902-5572.

Applicants should submit a letter of interest, completed application form, and current resume to the office of the Chief Electrical Inspector, PO Box 44460, Olympia, WA 98504-4460, by no later than April 1, 2001.

● Special Provision for non-IC Rated Recessed Fixtures

NEC 410-66(a) and (b) requires recessed lighting fixtures to be installed a minimum of ½ inch. (12.7 mm) away from combustible materials unless the fixture is IC rated. Type IC rated fixtures may be installed in contact with combustible materials. Depending on the size and type of the fixture, manufacturers installation instructions included in the listing of a fixture may require greater spacing from insulation or combustible materials than the NEC does.

Our inspectors occasionally encounter installations of non-IC rated recessed lighting fixtures in spaces that the Washington State Energy Code requires to be insulated. Since fixtures that are not IC rated must meet minimum clearance requirements and cannot contact insulation, some contractors have enclosed the fixture by building a **permanent, structurally sound** box around the fixture. This installation is acceptable to the department, provided the clearance from this structural box to all sides and above the fixture meets the minimum clearance from thermal insulation requirements in NEC 410-66(b) or the manufacturer's installation instructions, whichever is greater.

Thermal insulation installed outside and above such a box will not be considered as "installed over a recessed fixture such that it would entrap the heat produced by the fixture" when the appropriate "dead air" space described above is maintained around the fixture.

● Separation of Class 2 and Class 3 Circuit Conductors from Other Conductors

There has been some confusion over whether it is permissible to install class 2 and class 3 circuit conductors in the same bored holes as type NM-B branch circuit cable.

The main text of NEC 725-54 (a)(3) states: "Conductors of Class 2 and Class 3 circuits shall be separated by at least 2 in. (50.8 mm) from conductors of any electric light, power, class 1, nonpower-limited fire alarm, or medium power network–powered broadband communications circuits." Exception No. 1 to this requirement clearly allows class 2 and class 3 circuit conductors to run closer than the 2-inch separation when either all of the class 2 and class 3 conductors, or all of the other circuit conductors listed above are in nonmetallic sheathed cable.

Although there may be "system performance" reasons to maintain separation of these conductors, telephone, thermostat, and similar class 2 and class 3 circuits are permitted in the same bored holes as power and lighting circuits run in type NM-B cable.

● Code Question of the Month

This month's Code Question: The source of power for a 1999 NEC Article 700 Emergency System may be a tap ahead of the main service disconnect. True or False?

Last month's Question: *(What is the permissible voltage drop allowed on feeders and branch circuits?)* The answer is: D. (Not a code requirement only a Fine Print Note).

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Code guidance from the Department of Labor and Industries

Department of Labor and Industries

ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ronald Fuller, Chief Electrical Inspector **Vol. 4 No. 1** **January 2001**

● Stakeholders Meetings

We encourage you to attend the electrical stakeholder meetings during the upcoming months. The department is again offering 4 Continuing Education Units credit (CEU's) for those who attend the meeting and successfully complete a take-home examination.

Stakeholder Meeting Schedule

Jan 18, 2001	Washington Mutual Bldg. Community Room 500 Pacific Avenue, Bremerton, WA.	6:30 PM-9:00 PM
Jan 31, 2001	Moore Branch Public Library 215 s. 56TH Street, Tacoma WA.	6:30 PM-9:00 PM
Feb 15, 2001	City Council Chambers 321 E. 5th Street, Port Angeles, WA.	6:30 PM-9:00 PM

● Opportunity For Gaining Credit For Previous Experience In Certain Specialties

A window of opportunity exists to qualify *previous work experience* for certain specialty electrical contractor's licenses, administrator and specialty electrical technician certificates. WAC 296-46A and 296-401B revisions are expected to be adopted January 18, 2001. The revisions are part of the department's efforts to replace existing electrical policies and practices with specific WAC regulations consistent the electrical installations law (RCW 19.28). The specialties where *previous work experience* may be allowed are:

- **Domestic well specialty electrical technician (03A)**
- **Non-residential lighting maintenance and lighting retrofit (07A)**
- **Non-residential maintenance (07)**
- **Door, window, gate, and similar systems (10)***
- **HVAC/refrigeration limited energy technician (06A)**
- **Limited energy (06) Stand alone amplified sound (residential only)**
- **Residential maintenance (07B)***

*** New**

How can I qualify to take a technician exam? For applications received prior to December 31, 2001, persons may be eligible to take the appropriate technician specialty examination. To qualify, an applicant must show at least two years (4000 approved work hours per WAC 296-401B-450). *Previous work experience* may be allowed if the applicant submits a signed and notarized letter from their employer(s) stating they have "performed electrical installation, service or repair in the appropriate specialty. The employer must have been engaged full-time in the business of the appropriate specialty during the period of time to be certified. Employers must establish the appropriate business status by supplying the department with copies of their RCW 18.27 contractor's registration or business license.

Individuals will be permitted to take the technician specialty examination after submitting a qualifying application and paying the appropriate examination fees. Specialty electrical technician certificates will be issued after successful completion of the examination. All individuals who submit qualifying applications prior to December 31, 2001 will remain qualified to take the exam after that date, but may not work unsupervised after June 30, 2002 (see "How can I continue..." question below).

Previous work experience will not be allowed for work performed after: September 30, 2000 (for HVAC/refrigeration) or June 30, 2001 (for other specialties). After these dates work experience will only be allowed for electrical trainees working under the direct supervision of an appropriate specialty technician, specialty electrician or a journeyman electrician.

How can I continue to work while I prepare for the certification exam? Applicants meeting the two-year experience requirements will be issued a special third year training certificate; and until June 30, 2002 considered a technician for the purpose of working within the scope of the specialty without supervision and supervising first and second year trainees on the job site. After June 30, 2002 the individual must have successfully passed the certificate examination to work without supervision or to supervise trainees.

Will I be able to do work included in these open specialties without certification? No! Labor and Industries' compliance officers and electrical inspectors will ensure that each contractor or person doing electrical work has a proper electrical contractor license and/or journeyman, specialty or trainee certificate per WAC 296-401B sections 100, 110, 300, and 500. The maximum ratio of journeyman to trainees on a job-site, for all specialties, is 1:2.

HVAC/R, 1st year trainees may install HVAC/R thermostat cable unsupervised when the HVAC/R system consists of: a single thermostat in one- and two-family dwelling units and where line voltage power has not been connected to the system. HVAC/refrigeration 2nd year trainees may work unsupervised when installing thermostats or making thermostat cable connections in one- and two-family dwelling units.

Effective January 19, 2001 electrical inspectors will not immediately issue citations to those found not to be in compliance with current rules. Individuals and firms will be issued a written warning on the first offense. The written warning allows offenders 10 working days to make proper application in the appropriate specialty. If proper application has not been received by the department in the time allowed, a citation will be issued. There is no warning period for repeat offenders. After September 30, 2000 (for HVAC/refrigeration) or June 30, 2001 (for other specialties), firms and individuals who fail to obtain the proper license or certification within the 10 day warning period will forfeit their opportunity to apply for *previous work experience*.

Are there any additional requirements once I have obtained certification? In order to renew a technician certificate, the holder must demonstrate evidence of completion of an approved continuing education course(s) of at least eight classroom hours duration per year of the prior certification period. At least eight of those total hours shall be in a continuing education course approved on National Electrical Code (current version) changes. Currently the certification period is three years (36 months), so 24 hours of continuing education units are required for renewal.

- **Code Question of the Month**

This month's Code Question: What is the permissible voltage drop allowed on feeders and branch circuits? A. 3%; B. 5%; C. 2%; D. (Not a code requirement only a Fine Print Note)

Last month's Question: In a hospital facility where both the normal and essential branch circuit panelboards serve the same individual patient vicinity, what is the minimum size of the conductor that is required to bond the two panels together?

Answer: NEC 517-14 requires a minimum #10 insulated, copper conductor.

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Code guidance from the Department of Labor and Industries

Department of Labor and Industries

ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 3 No. 12** **December 2000**

Stakeholders Meetings

We encourage you to attend the electrical stakeholder meetings during the upcoming months. The department is again offering 4 Continuing Education Units credit (CEU's) for those who attend the meeting and successfully complete a take-home examination.

Discussion will include the new RCW, proposed WAC rule revisions, purchasing electrical work permits online, and a question and answer period.

Stakeholder Meeting Schedule

Jan 18, 2000	Washington Mutual Bldg. Community Room 500 Pacific Avenue, Bremerton, Washington	6:30 PM-9:00 PM
Jan 31, 2000	Moore Branch Public Library 215 S. 56th Street, Tacoma WA.	6:30 PM-9:00 PM
Feb 15, 2000	City Council Chambers 321 E. 5th Street, Port Angeles, WA.	6:30 PM-9:00 PM

AGAIN The #1 Most Written Correction: NEC 110-3(b) Installation and Use.

NEC 110-3: Listed or labeled equipment shall be installed and used in accordance with any instructions included in the listing or labeling.

Installers must **read and understand** the instructions and labels for electrical equipment before making the installation. All too often the electrician will throw away manufactures instructions without reading them. The listing and labeling approval depends upon the manufacturer's instructions for the proper function and safety of the equipment. Information is contained on paper instructions within the package and on data labels posted on the equipment. Good examples are… "Copper conductors only", "Maximum fuse size 60 amps, Minimum circuit ampacity 47 amps", "use as service equipment only", "maximum branch circuit rating 125 amps, "minimum clearance 6", "number of twisted wires under a crimp".

Information on the product bag or box will also indicate the product use. Wire nuts and NM-B cable connectors, for instance, allow only certain combinations of wire sizes to be used.

The inspector may request the product information sheets during the inspection process. Having this information available will help expedite your project.

Solar Photovoltaic Systems

NEC article 690 describes these systems. We have inspected these systems on street and highway warning signs, gate openers, and remote public bathrooms for many years. Remote weather stations, monitoring equipment and other utilization equipment are now installed with this type of power source. Installations of solar photovoltaic systems require an electrical work permit prior to beginning work. **If the system voltage is 30 volts or less**, property owners, (01) general or (06) limited energy electrical contractors may perform the installation. **If the system voltage is above 30 volts**, property owners or (01) general electrical contractors may perform the installation.

- **Bonding of Hydro-massage Tubs.**

NEC 680-73 States: *"All metal piping systems, metal parts of electrical equipment and pump motors associated with the hydro-massage tub shall be bonded together using a copper bonding jumper insulated, covered or bare not smaller than # 8 solid."* This new section requires bonding the metal non-current carrying metal parts of hydro-massage tubs to the metal piping system that supplies the massage tub ***unless*** it incorporates the use of a double insulated motor and inaccessible non-current carrying metal parts.

The code addresses the issue of double insulation by stating: *"Metal parts of **listed equipment** incorporating an approved system of double insulation and providing a means for grounding internal nonaccessible, noncurent carrying metal parts shall **not** be bonded."*

As in all electrical installations, the manufacturer's installation instructions must be followed in determining the proper installation procedure for the tub.

- **NEC 411 Lighting Systems operating at 30 volts or less.**

Low voltage lighting systems must be installed as complete "listed systems." Low voltage lighting systems use components that are evaluated to be used together per the listing requirements and the manufacturer's installation instructions. Mixing and mismatching components from different manufacturers may violate the installation instructions and listing of these systems resulting in fire or other heat damage.

Installations are being made that violate the listing and manufacturer's instructions. In many cases, multiple manufacturer's components (e.g. cable, lighting fixtures, transformers, etc) are being used by the installer to create a system. If the manufacturer's instructions do not specifically allow the different manufacturer's components to be used together, the installation is not acceptable.

Transformers used with low voltage lighting systems must be listed for the application and supplied with the system. Secondary conductors must not be grounded.

Caution should be used in the design of these systems since using the incorrect low voltage transformer can cause overheating of the fixture, possible fires or create other safety hazards.

Low voltage wiring systems must not be concealed or extended through a building wall, unless using a wiring method specified in NEC Chapter 3.

- **Code Question of the Month**

This month's Code Question: In a hospital facility where both the normal and essential branch circuit panelboards serve the same individual patient vicinity, what is the minimum size of the conductor that is required to bond the two panels together? A. #12 cu; B. #10 al; C. 10 cu; D 1/0 cu.

Last month's Code Question: May a feeder consisting of paralleled conductors be installed in two different types of metal conduit, such as **IMC and rigid steel?**

The Answer: The properties of each parallel run must be the same where the runs are in separate conduits.

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Department of Labor and Industries

ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Chief Electrical Inspector **Vol. 3 No. 11** **November 2000**

Stakeholder Meetings

We encourage you to attend the electrical stakeholder meetings beginning this month. Again, the department is offering 4 Continuing Education Unit credits (CEU's) for those who attend the meeting and successfully complete a take-home examination. Discussion will include the new RCW, proposed WAC rule revisions, purchasing electrical work permits online, and a question and answer period.

Stakeholder Meeting Schedule www.wa.gov/lni/electrical

11-08-00	**Tumwater**—L&I Auditorium, 7273 Linderson Way, Tumwater, WA	7-9 PM
11-09-00	**Aberdeen**—L&I Service Location, 415 W Wishkah, Suite 1B, Aberdeen, WA	7-9 PM
11-15-00	**Vancouver**—Clark Co PUD, 1200 Fort Vancouver Way Fl 3, Vancouver WA	7-9 PM
11-16-00	**White Salmon**—Work Source Bldg, 107 W. Jewett Blvd., White Salmon, WA	7-9 PM
11-29-00	**Longview**—Cowlitz Co PUD, 961 12th Longview, WA	7-9 PM
01-31-01	**Tacoma**—Moore Branch Public Library, 215 S 56th St., Tacoma	6:30-8:30 PM

New Chief Electrical Inspector Appointed

Ron Fuller has accepted the permanent position of Chief Electrical Inspector for the State of Washington. Ron has been filling the position as the acting chief since January 2000. He has been with the Department of Labor and Industries electrical program for over 10 years. He has been involved in the electrical construction industry for 28 years. Ron brings many skills and extensive electrical experience to the job of Chief Electrical Inspector.

Telecommunications Inspections

The department's commitment to the telecom industry is to require permits and inspections to address the safety issues in telecom installations. The department agreed to avoid creating any unnecessary obstacles. The statute established the telecom inspection threshold at a higher level than for regular electrical installations:

RCW 19.28.470 Inspections (1) The director shall require permits and require an inspector to inspect all installations of telecommunications systems on the customer side of the network demarcation point for projects greater than ten outlets. However:

(a) All projects penetrating fire barriers, passing through hazardous locations and all backbone installations regardless of size shall be inspected;

(b) All installations in single-family residences, duplex residences, and horizontal cabling systems within apartment residential units, including cooperatives and condominiums, do not require permits or inspections;

(c) No permits or inspections may be required for installation or replacement of cord and plug connected telecommunications equipment or for patch cord and jumper cross-connected equipment...

The safety issues addressed in legislative testimony were: proper support of cables, cables penetrating fire-rated construction (barriers), cables suitable for the installation environment, mandatory working clearances in front of other electrical equipment, grounding when required of the telecom systems, and installations passing through hazardous locations. The department will focus its safety inspection efforts on these aspects of telecom work.

We will not inspect for system performance/design criteria that are detailed in the telecom standards adopted by the statute. Although these standards apply to all

telecom installations, the department's inspectors will inspect only the mechanical and safety aspects of the telecom backbone and horizontal cabling systems.

Although a job may be below the inspection threshold and not require a permit and inspection (e.g. residential telecom installations), the installation standards (NEC and EIA/TIA) still apply to all the work done. The person performing telecom work on the customer side of the service provider network demarcation point work must work for a telecom contractor licensed under chapter 19.28 RCW.

Rule revisions are proposed to clarify the definition of telecommunications outlets, the maximum number of cables associated with an outlet, and continuing addition of outlets over time:

WAC 296-46A-900 Electrical work permits and fees.

(12) …For the purposes of determining the inspection threshold for telecommunications projects greater than ten outlets, the following will apply:

(a) An outlet is the combination of jacks and mounting hardware for those jacks, along with the associated cable and telecommunications closet terminations, that serves one workstation. In counting outlets to determine the inspection threshold, one outlet must not be associated with more than six standard four-pair cables or more than one twenty-five-pair cable. Therefore, installations of greater than sixty four-pair cables or ten twenty-five-pair cables require permits and inspections…

(b) The installation of greater than ten outlets and the associated cables along any horizontal pathway from a telecommunications closet to work areas during any continuous ninety-day period requires a permit and inspection.

● Documented Safe Switching Procedures

The Electrical Currents, May 1999, discusses when, with safe switching procedures, multiple feeders or branch circuits may supply installations under single management. The safe switching procedure must address disconnection of power to a building for maintenance and emergency situations. The safe switching procedure must be available at the time of inspection and include:

- A list of names of all those who are trained in the safe switching procedure for the disconnection of all power to the building in question. In some cases, this may include the disconnection of backup or emergency generation supplies to the building. At least one of these trained persons needs to be either on-site or on-call 24 hours a day 365 days a year. If on-call and not on-site they must be able to report to the site immediately when called.
- The procedures must be written, explaining the location of all disconnecting means and their order to be disconnected. If this procedure includes emergency generation systems, it must explain in detail the conditions under which the emergency system may be taken off line. Such systems may be critical in an emergency for the evacuation of the facility, fire fighting, etc.
- All disconnecting means must be clearly indicate with identification plates what they control and the location of all other disconnects for the building. Example: "1 of 3 disconnects for building A, other 2 disconnects located in panel to the right." These identification plates need to be permanent and durable.

A safe switching procedure is not the "lock-out, tag-out" procedure needed to fulfill other safety requirements, but it may include "lock-out, tag-out" training requirements and procedures in the documentation.

● Code Question of the Month

The answer to last month's code question is (B) in the elevator machine room. NEC 620-22(b).

This month's question: May a feeder consisting of paralleled conductors be installed in two different types of metal conduit, such as **IMC and rigid steel?**

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Department of Labor and Industries
ELECTRICAL CURRENTS
Office of the Chief Electrical Inspector
Ron Fuller, Acting Chief Electrical Inspector Vol. 3 No. 10 October 2000

Electrical code issues and answers.

Public Hearings on the new WAC Rules WAC 296-46A and WAC 296-401B

L&I is now receiving public comment on proposed revisions of WAC 296-46 to WAC 296-46A and WAC 296-401B. The revised rules will become effective in January 2001.

Public Hearings are scheduled as follows:

TUMWATER	EVERETT	YAKIMA	SPOKANE
11/27/2000	11/28/2000	11/29/2000	11/30/2000
L&I Auditorium	Best Western Cascadia	West Coast Yakima Center	West Coast Grand
7273 Linderson Way SW	2800 Pacific Ave	607 E Yakima Ave	303 W North River Dr
L & I telephone	Hotel telephone:	Hotel telephone:	Hotel telephone:
(360) 902-5259	(425) 258-4141	(509) 248-5900	(509) 326-8000

- All public hearings will be held between 1:30 PM and 6:30 PM.
- Please call (360) 902-5259 if you have questions regarding these hearings.

You may receive a copy of the proposed rules at our web-site www.wa.gov/lni/electrical. Public comment will be accepted during the hearings and in writing through November 30, 2000. Written comments should be sent to:

Chief Electrical Inspector
Electrical Section
PO Box 44460
Olympia, WA 98504-4460O

Code Question of the Month.

The answer to last month's code question is "3 inches" and is found in NEC 300-14.

This month's question: Where is the branch circuit overcurrent protection device for an elevator car air conditioning unit to be located?

A. Above the elevator car
B. In the elevator machine room
C. At the air conditioning unit
D. None of the above

The answer to this code question will be on the next Electrical Currents issue.

Can Third Party Testing Laboratories Inspect Electrical Installations?

NO. Product suitability may be evidenced by listing and labeling but electrical installations, whether made in prefabricated structures in a factory or in buildings in the field, fall under the jurisdiction of the Department of Labor and industries or cities and towns who have inspection authority under Chapter 19.28 RCW.

Sometimes a structure containing an electrical installation arrives at the job site bearing a testing laboratory's listing mark. The department will recognize listing marks on individual equipment installed within these structures as evidence that the equipment meets an appropriate standard. The department will not recognize a listing mark that seemingly encompasses the entire installation of equipment and wiring within a manufactured structure. Only the department, cities, and towns, who have electrical inspection authority, may inspect the electrical installation within or on these or any other structures. The installation of electrical equipment remains under the jurisdiction of the department or other local authority and there is no listing mark that replaces an electrical inspection done by a qualified electrical inspector.

● L&I's Electrical Program Can Help You Achieve and Maintain Competitive Advantage

The L&I electrical program's primary responsibility is to ensure safe electrical installations for places where people live, play and work.

The electrical program ensures electrical safety while providing competitive advantage. We provide electrical protection services to Washington consumers and workers and ensure compliance with Washington State laws and construction-industry standards. We work in collaboration with the regions by leading, coordinating and directing statewide activities that promote uniform certification, licensing and enforcement. We respect our customers and assist them in complying with applicable laws through technical information, education, and communication.

The electrical program strives to provide our customers with personnel, process, place, promotion, price, and product. We are constantly monitoring for successes in both the public and private sectors for new ideas and methods. We adapt these successes to become more efficient and effective while at the same time providing for public safety and adding competitive advantage for our customers in the electrical industry.

Personnel: We have quality employees who develop positive relationships with our customers. We also help to ensure the electrical industry workforce is competent and able to perform high quality installations.

Process: We are committed to developing a simple and fair process for business. We promote regulatory improvement, creating new rules that make sense and work well for our customers. Rules must be necessary, fair, understandable and consistent.

Place: Location, location, location! We have offices located statewide where our customers can do business with us on a personal level. We now offer many services on-line and will soon have the ability for all customers to purchase permits, request inspections, and perform licensing activities on-line. We have an extensive web-site (www.wa.gov/lni/electrical) where up to date information, publications and forms are available as well as automatic notification of information affecting our customers.

Promotion: We want our customers to know what is going on. We use electronic media, e-commerce, publications, presentations, and one-on-one conversation to promote and develop customer ownership and responsibility through communication, honesty and trust.

Price: We offer our customers efficient services at affordable and fair prices.

Product: We ensure that Washington is a safe place to live and work. We are continually moving to develop streamlined processes and less expensive ways for our customers to do business.

The electrical program combines integrity, respect, trust, partnership, ownership and responsibility into an effective program allowing us to deliver constantly improving products for our customers. Providing for public safety and helping our customers achieve their goals is the key to the L&I electrical program's long-term success.

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ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Acting Chief Electrical Inspector **Vol. 3 No. 9** **September 2000**

Electrical code issues and answers.

● Public hearings on proposed WAC rule revisions

Public hearings are tentatively scheduled for mid to late October to receive public comment on proposed WAC rule revisions. The exact dates and locations will be posted on our Internet home page at www.wa.gov/lni/electrical . If you want to be notified automatically by e-mail see the following article about e-mail notification.

The proposed versions of WAC 296-46 and 401A have been renamed, restructured, and have revisions containing: telecommunications implementation language, technical changes, and policies turned into rule. The on-line versions of the new law and proposed rule revisions will be available soon on the electrical web site. You will be able to review the proposed rule changes on-line.

● Automatic e-mail notification of rules, policies, and other information effecting our customers

The electrical program has a one-way newsgroup (***Electrical News Announcements***) that allows all electrical stakeholders to receive automatic e-mail notification of meetings and other electrical news.

Electrical News Announcements has over 400 subscribers. We would like more subscribers to use this resource to get information quicker and more efficiently. Electrical News Announcements is a very powerful communication tool. We welcome suggestions on information you would like to receive using this technology.

How do you become a subscriber?

New users should go to *http://listserv.wa.gov/archives/electrical.html* and click on "**join or leave the list (or change settings)"**, then fill in your e-mail address and name. The subscription procedure recently changed when the list server was upgraded. If you subscribed previously and have not received any messages, please go to this web-site and either modify your information or subscribe again.

● Ever thought of becoming an electrical inspector?

Because of today's economic boom, coupled with the retirement of seasoned State Electrical Inspectors, the demand has never been greater for qualified applicants for the position of State Electrical Inspector. The time is now to make that move toward a rewarding job ensuring safe electrical installations in the state. For more information call your local Labor and Industries office or visit our web site at *http://www.wa.gov/lni/ohr/lnijobs.htm#safety*.

● Requesting an inspection

There are four ways to request an electrical inspection: Telephone, fax, in person, and using the Electrical Inspection Request Service (EIRS). The department receives about 700 inspection requests each day. You must provide sufficient information so that we can assign your request for inspection to the proper inspector.

When requesting an electrical inspection it is **very important** to give the permit number, purchaser's name, site address, what the inspection is for, and a contact telephone number and name. Without the permit number inspections may be delayed or not entered at all.

A new Internet inspection request system, Electrical Inspection Request Service (EIRS), is now available for contractors 24-hours a day. You may download the application allowing you to utilize EIRS at *http://www.wa.gov/lni/electrical/.* At this time, EIRS is limited to electrical and construction contractors.

● Fixtures mounted over junction boxes

The National Electrical Code (NEC), Article 410-14 (b), states that *"Electrical-discharge lighting fixtures surface mounted over concealed outlet, pull, or junction boxes shall be installed with suitable openings in back of the fixture to provide access to the boxes."*

When surface mounted electrical-discharge lighting fixtures are mounted over boxes, sufficient access to the box must be provided to allow re-pulling, replacement, or disconnection of wires in the box. This applies where:

1) A junction box is connected to a raceway system*.
2) The conductors entering the fixture are tapped from conductors in the junction box.
3) The interior of the fixture is not listed for junction of fixture wires with branch circuit wires.

NOTE * Access to the junction box is not necessary where a single nonmetallic (Type NM) cable feeds unspliced or untapped through a box and is secured to the fixture body with an approved fitting or clamp.

Where an opening is required in the back of a fixture mounted over a junction box, attention should be given to the following:

1) Conductors must be protected from abrasion as provided in NEC 410-28 (b). Sharp edges in the opening must be bushed with a suitable insulating material.
2) The opening must be of sufficient size to provide access to the junction box.

● Preventing Home Fires: Arc Fault Circuit Interrupters (AFCIs).

Problems in home wiring, like arcing and sparking, are associated with more than 40,000 home fires each year. These fires claim over 350 lives and injure 1,400 victims annually. Electrical fires caused by arcing cause more than $620 million in property damage annually.

A new electrical safety device for homes, called an arc fault circuit interrupter (AFCI), will provide enhanced protection from fires resulting from unsafe home wiring conditions. By the time a typical fuse or circuit breaker opens a circuit to defuse arcing conditions, a fire may already have begun.

Arc fault circuit interrupters will be required January 1, 2002 by the NEC 210-12 (b) for all circuits that supply 125 volt 15 and 20 amp receptacles in dwelling unit bedrooms.

The consumer Product Safety Commission has a home electrical safety audit checklist to help reduce fires. The checklist may be found at *http://www.cpsc.gov/cpscpub/pubs/513.pdf.* A home wiring hazards guide may be found at *http://www.cpsc.gov/cpscpub/pubs/518.pdf*.

● Code Question of the Month

The "Code Question of the Month" will be a regular continuing feature of the *ELECTRICAL CURRENTS*. Each month a new question will be asked focusing on the electrical code. The answer will appear in the next *ELECTRICAL CURRENTS* issue.

What is the minimum length that the conductors in a single gang light switch box must extend outside the box opening?

A. 2 inches B. 3 inches C. 6 inches D. 9 inches

The answer to this code question will be in the next *ELECTRICAL CURRENTS* issue.

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Ron Fuller, Acting Chief Electrical Inspector Vol. 3 No. 8 August 2000

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● WAC Rule Process: WAC 296-46 and WAC 296-401A

Revisions to WAC 296-46 and WAC 296-401A are underway with the public comment and hearing stage following. Official notification should be announced near the end of August. Monitor the Electrical Program website *(www.wa.gov/lni/electrical)* for the proposed language and public hearing dates. Public hearings will be held in Olympia, Everett, Yakima, and Spokane. The revised rules should become effective in December.

The rule making process was heavily stakeholdered by a diverse group of the electrical industry consisting of electricians, contractors, labor representatives, industry associations, and local jurisdictions. Five stakeholder groups designated as technical, telecommunications, HVAC/R, traffic management, and low voltage, with approximately fifteen members each, spent many days meeting during the development of the rule changes. A core group made up of representatives from each of the five stakeholder groups reviewed all of the changes. The members of the stakeholder groups were heavily involved in the actual drafting of the rule revisions. The department sends thanks to all involved in this process.

● Required Burial Depth for Co-axial and Other Telecom Cables?

Communication cables including fiber optical and co-axial have relatively low voltage and volt/ampere (va) levels; but many communication conductors, including co-axial, function as life safety systems. Telecommunication cables often communicate emergency conditions to monitoring services. Compromise of these systems could place lives and property at risk. The National Electrical Code (NEC) requires all direct burial cables or conductors be covered with 24 inches of clean backfill unless specified conditions exist as provided in NEC Table 300-5 column 1. Conductors installed in conduit must be covered per the requirements of Table 300-5 columns 2 through 5. NEC burial depth requirements must be adhered to for proper and safe installations.

● When Does a Manufactured Structure Require FAS Labeling?

There are two criteria for determining requirement for Factory Assembled Structures (FAS) labeling on manufactured structures. FAS inspection is required when:

1. The structure has a door through which a person may pass **and**…
2. When any portion of the structure is **not accessible for inspection by removable wall, floor and ceiling panels.**

"**Accessible**" means panels may be removable by a means (such as screws, not nails) that will not affect the integrity of the structure and access to inspection is not obstructed by fixed equipment or installations.

● Contractors: Check your Employees' Certification.

To help avoid license and certification citations, contractors should check their employees' certification cards. Expired certificates of competency and trainee certification cards account for a large percentage of citations issued to employers and employees. In order to avoid costly citations, re-testing and late fees associated with expired certificates of competency and trainee cards, contractors should regularly check **all** employees' certification status.

● Field Evaluation and Listing of Electrical Products

Field Evaluations:

- An electrical product field evaluation is the process where an electrical testing laboratory evaluates a specific piece of electrical equipment to recognized standards. Approval to perform field evaluations for equipment to be installed anywhere in the state must be granted by the Department's Chief Electrical Inspector.
- Field evaluation is restricted to a single piece of equipment.
- Normally, field evaluations are conducted in the field. However, preliminary field investigation may be performed in factories.
- Unless the Chief Electrical Inspector grants a waiver, the field evaluation mark may not be applied until the equipment is installed in the field and a final field investigation is completed. If a product is delivered to the site with a field evaluation mark applied, you should inform the electrical inspector so verification may be made that the mark was properly applied and the field evaluation was acceptable.
- A final field evaluation acceptance report will be sent to the Department, local electrical inspection supervisor, and the end user.

Listed Products:

- Listed products undergo extensive tests to determine safety and performance levels.
- Many tests necessary for listing approval may only be performed under laboratory conditions with laboratory equipment. Often laboratory testing involves destructive testing of a prototype product to determine its ability to withstand electrical dynamics and physical forces. If testing shows the product does not meet acceptable standards, the manufacturer must improve the product and the testing must be repeated until the product meets the appropriate standards.
- After the product is accepted, the testing laboratory issues a final report and authorizes the manufacturer to apply a listing mark to the product at the factory.
- The testing laboratory performs follow-up visits to the factory each year to verify the manufacturer maintains the approved product specifications.

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Ron Fuller, Acting Chief Electrical Inspector **Vol. 3 No. 7** **July 2000**

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● Implementation Activity for HVAC/R Electrical Specialty.

The department has begun implementing the requirements for HVAC/R contractor/electrician licensing/certification effective March 1, 2000.

Any firm, partnership, corporation, or individual that is not currently in compliance with the licensing and certification requirements is at risk of loosing the ability to grandfather their HVAC/R experience. Continued non-compliance could result in citations. Electrical work permits and inspection of work is required for HVAC/R work. Compliance activity will follow the flow chart published in the March 2000 Electrical Currents.

● Telecommunications Permits

Effective June 8, 2000 you must be a licensed telecommunications contractor, a general electrical contractor (01), or a limited energy system specialty contractor (06) to purchase telecommunications work permits.

● Licensing, Certification, and Permits for Maintenance Work

Electrical maintenance, service, or repair work must be done by properly certified workers, employed by licensed electrical contractors, unless exempted in Chapter 19.28.610 RCW. The exemptions include:

1. Property owners and their regularly employed employees working on the premises of their employers, unless the electrical work is on the construction of a new building intended for rent, sale, or lease.
2. Utility type work as described in Chapter 19.28.200 RCW.
3. A householder assisting or receiving assistance from a friend, relative, or neighbor when none of the individuals doing the electrical work does not accept money or any other form of compensation for the volunteer work.

WAC 296-46-495(7) requires an electrical work permit: *"for installation, alteration, or maintenance of electrical systems…"* The following maintenance activities are exempted from the permit and inspection process: *"...replacement of circuit breakers or fuses, for replacement of lamps, snap switches, receptacle outlets or heating elements, replacement of a lighting fixture ballast with an exact same ballast, replacement of contactors, relays, timers, starters, or similar control components or for plug-in appliances or travel trailers."* A proposed change to this section of the Washington Administrative Code would also exempt the replacement of a motor with a motor of like voltage and similar ampacity characteristics from the requirement to obtain an electrical work permit.

● When is illumination required for Electrical Equipment?

Where the electrical equipment is rated 600 volts and less, NEC 110-26(d) requires illumination for *"...all working spaces about service equipment, switchboards, panelboards, or motor control centers installed **indoors**."* The general requirement in NEC 110-26 requires working space for all electrical equipment to where *"...examination, adjustment, servicing, or maintenance while energized..."* is necessary.

NEC 110 34(d) requires illumination for *"...all working spaces **about electrical equipment**..."*, where the equipment is rated over 600 volts, whether the equipment is installed indoors or outdoors. The general requirement in NEC 110-34(a) requires *"working space in the direction of access to live parts..."* for all electrical equipment rated over 600 volts.

The Department has determined that for the purpose of determining the access and working space around transformers, transformers would not be considered as equipment likely to require examination, adjustment, servicing, or maintenance while energized and would not require working space unless there were renewable or adjustable parts in the transformer (such as bayonet fuses, switches or load-break elbows).

● Proposed changes to the WAC rules.

Listed below are some highlights of the draft WAC rule proposed changes to date:

- **WAC 296-46-090** *"…the National Electrical Safety Code (NESC C2-1997) excluding Appendixes A and B are hereby adopted by reference as part of this chapter."* Proposed addition.
- **WAC 296-46-092** Specific HVAC/R and general definitions have been proposed which provide clarity and specificity to the terms used in chapter 19.28 RCW and WAC 296-46.
- **WAC 296-46-100** Revises the WAC requirements to more closely relate to the requirements in chapter 19.28 RCW. *"(1) In order to meet the minimum electrical safety standards for installations, all materials, devices, appliances, and equipment, not exempted in chapter 19.28 RCW, must conform to applicable standards recognized by the department, be listed, or field evaluated.*
- **WAC 296-46-104** New section turns a policy on Traffic Management Systems into WAC rule.
- **WAC 296-46-215** Clarifies that GFI testing is required after all the feeders are installed.

  "(2) Equipment ground fault protection systems required by the National Electrical Code must be tested prior to being placed into service to verify proper installation and operation of the system as determined by the manufacturer's published instructions. This test or a subsequent test must include all system feeders."
- **WAC 296-46-215/23040** Proposed definitions for the locations allowed for feeder and service disconnects. These changes will closely mirror the changes proposed in the 2001 NEC.
- **WAC 296-46-23062** GFI testing for service proposal will be similar to the requirements for GFI testing of feeders described in WAC 296-46-215.
- **WAC 296-46-500** The requirement for a redundant off switch in residential septic system has been removed (old WAC 296-46-50002(1)(g)). Other new proposed items are:

  "(5) Indoor grinder pumps installed in chambers with less that ten gallons capacity require no special wiring methods, but do require venting as required above.

  (6) Secondary treatment effluent pumping chambers such as sand filters are unclassified, and require no special wiring methods.

  (7) Inspection approval is required before covering or concealing any portion of the septic electrical system, including the pump. New septic and effluent tanks containing electrical wires and equipment must be inspected and approved by the department prior to being loaded with sewage."
- **WAC 296-46-514** A proposed requirement for a maintenance disconnect means has been added to address NEC 514(6) which was added in the 1999NEC. It reads as follows:

  "*(2) A maintenance disconnecting means or operator must be provided to disconnect individually, each dispensing device. The maintenance disconnecting means or operator must provide a separate and individual means to remove all external voltage sources, including feedback, during periods of maintenance and service for each individual dispensing device. For multi-circuit installations, an electrically held normally open contactor operated by a push-button is permitted to be used."*
- **WAC 296-46-670 Definitions.** This section for the definition of industrial control panels and industrial manufacturing, and food processing plants as been moved to a newly created section, **WAC 296-46-102**.
- **WAC 296-46-900 Electrical work permit and fees.** This section replaces WAC 296-46-495. It adds new requirements for the permitting of telecommunications work.
- **WAC 296-46-930** This section has been revised to reflect changes in specialty licensing and certification of contractors and administrators.

WAC 296-46-940 Is revised explaining new requirements for Electrical/telecommunication contractor licensing.

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Conductor Termination Compound.

Listed conductor termination compounds used on splices and terminations to retard oxidation must be suitable for use with the conductor type it is applied to. These compounds do not have a harmful effect on the listed conductors metals, insulation or equipment when used as per manufacturer's installation instructions. Care must be used when applying these compounds to ensure that an excessive amount is not applied. Excessive compound may melt and flow down into breakers or the equipment and affect their operation.

When is a Light Required in an Attic, Under Floor Space, Etc?

NEC 210-70(3) states that, in dwelling units, a light is required in attics, under floors, etc. and must be located near the equipment requiring servicing. What is the definition of **requiring servicing**? The term is defined as a piece of equipment that will not deliver or perform its intended use without maintenance, such as replacing a filter(s), lubrication of bearings, or other actions enabling the equipment to function as designed. It is not required to have a light for equipment that is designed to be essentially maintenance free such as an attic fan. If the manufacturer's installation instructions state that the product requires no maintenance to deliver the intended service life of the product, a light will not be required. A light is required as per NEC 210-70(3) when the space is used for storage of any kind.

What licensing is required for wiring care occupancies?

All occupancies listed in WAC 296-46-130 require general electrical (01) licensing status for contractors and installers with **some exceptions:** Residential (02) electrical status is permitted to wire facilities that operate under the guidelines of DSHS and the Department of Health and are located in family dwelling units. Other care occupancies that are healthcare treatment facilities or institutional in nature located in other than family dwelling units are not allowed to be wired by residential (02) contractors or installers. An article on boarding homes and assisted living facilities may be referenced in the January 1998 Currents Newsletter. The article states that boarding homes and assisted living facilities are classified as healthcare occupancies and are not dwelling units. The inspection fees for boarding homes and assisted living facilities are based on the commercial/industrial fee tables {WAC 296-46-910} and electrical plan review is required.

When is existing wiring required to comply with current codes?

Remodeled and repaired structures often involve changing only a portion of the wiring. All wiring left untouched and in good condition will be considered acceptable when installed in accordance with the code in force at the time of its initial installation provided the following is considered:

1) Structures damaged by fire may require closer examination to determine suitability of the existing wiring. Some tests can be performed and may be required to judge the fitness of the wiring.
   a) Over-heated insulation will be brittle and will flake off when slightly bent.
   b) A megger test will indicate a lower than acceptable megohm level.
   c) Close examination may reveal physical damage by falling debris.
2) Where insulation is to be installed around knob and tube wiring, S-Type fuses must be installed to keep the wires' amperage in the 60 deg. C column of table NEC 310-16 and NEC 240-3(d).
3) Load centers will be inspected for overheating, bonding, and proper fusing.
4) The grounding electrode system must be intact.

As always, inspectors and electricians must use their training and judgment when determining whether wiring must be updated.

Inspection of Electrical Assemblies

Approval of electrical assemblies such as field-assembled components or manufactured assemblies within an enclosure has been an increasing debate. With the enhancement of technology and advancement of manufacturing the electrical industry has seen a flood of new and innovative products. Products range from highly complex to very simple. The need for assessment of these products has placed an elevated demand on inspection agencies and

testing laboratories. Electrical inspectors usually require electrical assemblies to be listed or evaluated by a testing laboratory. What is the requirement?

RCW 19.28.010 states, "All materials, devices, appliances, and equipment used in such installations shall be of a type that conforms to applicable standards **or** be indicated acceptable by the established standards of any electrical product testing laboratory which is accredited by the department." Applicable standards such as NFPA 70 (The National Electrical Code), NFPA 79, ANSI/UL Standards, NESC are examples of standards acceptable to the department. When inspecting an electrical installation or product the inspector may approve it or disapprove it based on his training, knowledge, and experience. The authority having jurisdiction has the ultimate decision making authority for approval of electrical installations. Where the National Electrical Code requires listed materials or equipment, listing is required.

● The WAC Rule Process Moves Ahead

As you may know the process is under way to revise the WAC rules (WAC 296-46)
And WAC 296-401A). The department is working continuously with our stakeholder partners to develop rules for electrical installation and licensing.
WAC 296-46-495, WAC 296-46-725, WAC 296-46-770, and others, are new or modified subsections describing the telecommunications inspection threshold, annual electrical maintenance permits, lines of demarcation, definitions of telecommunication installations, scope of work for installers and contractors. Other sections of the WAC rules are modified or created to more clarity or introduce needed rules. Below are examples of changes.

- WAC 296-46-910 has been changed to include telecommunication permit fees, and restructure HVAC/refrigeration permit fees.
- WAC 296-46-920 has been modified to include civil violations for telecommunication contractors.
- WAC 296-401A-140 has been modified to more clearly define the scope of work permitted by HVAC/refrigeration installers.
- WAC 296-46-930 has been modified to more clearly define the scope of work that HVAC/refrigeration contractors may perform.
- WAC 296-46-092 has been added for definitions of words used in the RCW and WAC.

Other sections of the WAC rules are under restructuring and modification efforts to better serve users. As always, your input is welcome if you have suggestions or comments on any part of the WAC rules that you think needs clarification or modification. This process is on a fast track. Your comments need to be submitted as soon as possible. This is your opportunity to give input.

● Isolated Metallic Elbows

The National Electrical Code (NEC 250-86) requires that metal enclosures and raceways be grounded. Metal elbows installed in nonmetallic conduit systems are not required to be grounded provided they are buried to a minimum depth of 18 inches to the top of the elbow. The purpose of this requirement is to minimize the possibility of human contact with energized parts.

● Who Can Install Conduit Systems?

There has been considerable confusion on required licensing and certification for installing conduit systems. The breakdown is as follows:

- Journeyman Certification (01): May install conduit in all occupancies as needed
- Residential Specialty (02): Limited to Nonmetallic sheathed cable (Romex) except for services, feeders, and loads related to the residence where raceway is required or desired such as nonmetallic underground installations, hot tubs and swimming pools.
- Pump and Irrigation (03), Sign and Outline Lighting (04), Domestic Well (03A), Domestic Appliance (05), Nonresidential Maintenance Specialties (07): Raceways as needed within the scope of the specialty
- HVAC/refrigeration Specialty (06A): Short sections of raceway for protection of cables only
- Limited Energy Specialty (06): Raceways as needed within the scope of the specialty. (**Note**: This specialty is normally restricted from installing conduit systems on prevailing wage jobs by labor contract).

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ELECTRICAL CURRENTS

Office of the Chief Electrical Inspector

Ron Fuller, Acting Chief Electrical Inspector **Vol. 3 No. 5** **May 2000**

Electrical code issues and answers.

● Inspectors Using Hand-held Computers

It's finally a reality. The much-anticipated implementation of the Fujitsu Stylistic 2300 hand-held computer has begun. Training for the electrical inspectors who will be using the new technology started on April 10th and will be completed May 24th.

This new technology was necessary to replace an obsolete system of "bubble sheets" that have fields that require blackening in and then are put through a scanning machine for input into the permits system. Over the past few years hardware for the scanning machines has become increasingly harder to find, and some parts are unavailable.

The new system will allow inspectors to connect the hand-held unit to the computer network in the morning and down load the day's inspections into the unit, take the unit to the field, and enter inspection data into the hand-held computer. The following morning the unit is reconnected to the computer network and the previous day's inspections are up loaded into the permit system and new inspections requests are downloaded.

Some of the advantages of the new system are more accurate data input, the complete inspection history is at the inspectors finger tips, comments and notes can be entered into the computer in the field, and the units have the capability for future expansion.

● Protection of Grounding Electrode Conductor.

Article 250-64 (b) allows a grounding electrode conductor sized #4 AWG and larger to be run without physical protection where the conductor is judged to be free from exposure to **severe physical damage**.

A # 6 AWG grounding electrode conductor may also be run without physical protection where the conductor is judged to be free from **physical damage** **AND** where run along the surface of the building construction where it is securely fastened to the construction.

Grounding electrode conductors smaller than #6 AWG and #6 AWG conductors that are subject to physical damage must be in rigid metal conduit, intermediate metal conduit, rigid nonmetallic conduit, electrical metallic tubing or cable armor. When the grounding electrode conductor is run in metallic raceways the ends of the raceways must bond to the grounding electrode conductor at both ends to comply with the requirements of NEC 250-64 (e).

The grounding electrode conductor that runs between ground rods that are remote from a building will be considered to be free from physical damage where buried in the earth a minimum of 12 inches below grade level.

● Access and Working Space.

As real estate and building costs escalate, owners and designers look for ways to maximize building space. One way is to reduce the size of the dedicated space required for electrical equipment. It is important that the minimum requirements of NEC 110-26 be consulted so that adequate space will be provided at electrical equipment requiring examination, adjusting, or servicing. This working space is required to be equal to the width of the equipment or 30 inches, whichever is greatest. The depth of the working space varies from 3 to 4 feet depending on the voltage, and whether there are grounded, ungrounded or live parts on the opposite wall.

An important and often overlooked requirement is contained in part C. This deals with the access and entrance requirements to the working space. The general rule allows a single entrance, but if the equipment is over 6 feet wide and rated 1200 amps or more the single entrance rule is modified.

"For equipment rated 1200 amps or more and over 6 feet wide that contains overcurrent devices, switching devices, or control devices, there shall be one entrance not less than 24 inches wide and 6 ½ feet high at each end of the working space."

There are two exceptions that allow a single means of access

"*Exception No. 1: Where the location permits a continuous and unobstructed way of exit travel, one means of access shall be permitted."*

"Exception No. 2: Where the workspace required by Section 110-26(a) is doubled, only one entrance to the working space is required."

Failing to address these requirements during the design stage can result in costly problems and delays later on, such as adding entrances, relocating equipment and even relocating walls.

● When is a Light Required in an Attic, Under Floor Space, Etc?

NEC 210-70(3) states: *"For attics, under-floor spaces, utility rooms, and basements, at least one lighting outlet containing a switch or controlled by a wall switch shall be installed where these spaces are used for storage or contain equipment requiring servicing."* Examples of "equipment requiring servicing" that may be installed in these locations include but is not limited to electronic air filters, equipment requiring air filter replacement, water pumps, sump pumps, heating and cooling units, and air handlers. A light is not required for equipment that is designed to be essentially maintenance free such as an attic fan. If the manufacturer's installation instructions state that the product requires no maintenance to deliver the intended service life of the product, a light will not be required. A light will be required when the space is used for storage of any kind.

● Identification of Disconnecting Means.

NEC 110-22 states: *"Each disconnecting means required by this Code for motors and appliances, and each service, feeder, or branch circuit at the point where it originates, shall be legibly marked to indicate its purpose unless located and arranged so the purpose is evident. The marking shall be of sufficient durability to withstand the environment involved."*

It is important that electricians comply with the requirements of this code section. Proper labeling of disconnecting means helps assure a safe electrical environment be it in an industrial, commercial or residential application. In a situation where power must be disconnected quickly, it is essential that any disconnect, whether it is for large industrial machinery or something as simple as a residential branch circuit, be easily identifiable by the person who will disconnect the circuit.

All too often, branch circuits are identified in electrical panelboards by simply labeling the circuit "lights", "plugs", "kitchen" etc. In the interest of safety, circuit directories should more narrowly define the function of the circuit. Examples are "Kitchen and Dining room lights", Master Bedroom lights and plugs", "Kitchen Counter Outlets" etc.

Equipment disconnecting means must also be labeled and a description of the specific equipment to be disconnected should be included on the disconnect. An example would be where multiple disconnecting means are installed within sight of three separate air conditioning units. The disconnects should be marked "left AC Unit", "Center AC Unit", "Right AC Unit", or with other descriptions that identify each specific unit rather than marking all three units "Air Conditioner". In cases where the purpose of the disconnect is clear, marking of the disconnect is not required. An example of this is when the disconnect is part of or is mounted on the equipment that it disconnects. Installers should be mindful that what is obvious to them may not be for individuals that may be required to disconnect the equipment.

Marking of disconnecting means must be done in a manner that will not be adversely affected by the environment in which it is installed.

● Made and Other Electrodes.

One of the ten most often referenced code articles inspectors cite while performing electrical inspections is Article 250-52 of the National Electrical Code which states in part: *"Where none of the electrodes specified in Section 250-50 is available, one or more of the electrodes specified in (b) through (d) shall be used. Where practicable, made electrodes shall be embedded below permanent moisture level. Made electrodes shall be free from nonconductive coatings such as paint or enamel. Where more than one electrode is used, each electrode of one grounding system (including that used for air terminals) shall not be less than 6 ft (1.83 m) from any other electrode of another grounding system. Two or more grounding electrodes that are effectively bonded together shall be considered a single grounding electrode system."* The following is a brief summary of NEC 250-52. **This newsletter article does not replace study of NEC 250-52 to grasp a complete understanding of this code.**

Underground gas piping cannot be used	Aluminum electrodes cannot be used
Rod and pipe electrodes must be at least 8 feet in length	Pipe electrodes must be ¾ inch minimum diameter
Rods of iron and steel must have corrosion protection Rods of iron and steel must be 5/8 in. diameter minimum	Plate electrodes must be buried 2 ½ feet below grade Plate electrodes must have 2 square ft. of surface area
Stainless rods smaller than 5/8 in. diameter and non-ferrous rods not smaller that ½ in. must be listed	Metal underground systems such as piping systems and underground tanks may be used as a grounding electrode
Drive ground rods a minimum of 8 feet. If rods cannot be driven straight 45 degree angle is OK or bury rod a minimum of 2 ½ feet below grade level	

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Code guidance from the Department of Labor and Industries
Department of Labor and Industries
ELECTRICAL CURRENTS
Office of the Chief Electrical Inspector
Ron Fuller, Acting Chief Electrical Inspector **Vol. 3 No. #4** **April 2000**

Electrical code issues and answers.

Telecommunications Bill Passed and Will Soon be Implemented.

The Telecommunications Bill was signed on March 30th and goes into effect June 8th, 2000. Under this bill, telecommunications contractors must be registered, insured and bonded. Certification will also be required for administrators, but certification is not required for telecommunications installers. Inspections will be required for all Telecommunications installations that have over ten outlets, penetrate fire barriers, pass through hazardous locations, or those installations which include a riser backbone. Electrical contractors may perform telecommunications work in their area of specialty.

- Contractors can become licensed beginning May1, 2000 with an effective date of June 8th.
- Administrators may be grandfathered without testing by telecommunications companies who have been in business 2 years prior to July 1, 2000.
- Contractor licensing, permits, and inspection will be required after the effective date.

WAC 296 Rule Revisions

WAC 296-46 and 401A rules are being opened for revision. Stakeholders and interested parties are urged to give input. Those interested are invited to call the Chief Electrical Inspector's office at (360) 902-5249 to give notification of your interest so that we may schedule stakeholder meetings to facilitate the process. This is your opportunity to contribute. You are encouraged to participate in this process!

Stakeholders Meetings in Eastern Washington.

The following Stakeholders meetings have been scheduled to help all attendees better plan their busy schedules and agendas. This is your chance for input. You can also receive 4 CEU credits for both attending the meeting and satisfactorily completing the take home exam (with a score of 70%) which will be available at the meeting. A maximum of 4 CEU's will be awarded in each fiscal year (July1 to June 30). Meetings now scheduled are:

Okanogan	Wenatchee	Moses Lake
6:00 – 9 PM	6:00 – 9 PM	6:00 – 9 PM
April 17	April 18	April 19
Okanogan County PUD Auditorium	Douglas County PUD Auditorium	3001 W Broadway Ave. Moses Lake L&I conference Rm

Does Bidding Electrical Jobs Require an Electrical Contractors License?

RCW 19.28.120 states it is unlawful for any person, firm, partnership, corporation, or other entity to engage in, conduct, or carry on **the business of installing or maintaining wires or equipment to convey electric current.** WAC 296-46-920 (1) states that offering to perform, submitting a bid for, installing or maintaining conductors or equipment that convey or utilize electrical current is liable for a civil penalty. Bidding and offering to do **work is** considered to be integral to "being in the business" as an electrical contractor. Unlicensed persons or firms bidding or offering to do electrical work are illegally acting as an electrical contractor and may be issued citations.

Who May Conduct Field Tests On GFP Systems

Recently, questions have been asked about who is allowed to conduct field-testing of GFP systems. The requirements in NEC 230-95, 215-10, and 517-17 is for service/feeder disconnecting means operating 151 to 600 volts, and rated 1000 amperes or more on solidly grounded wye systems. This test must be performed on site and prior to energizing.

In the past, the department recognized a limited number of testing firms qualified to perform this test. Currently, the department recognizes anyone who has the **capability** of performing the test. The department considers a **capable**

entity as one who possesses the skill, knowledge and equipment required to perform the test. The test must be performed according to manufacture's instructions and a written record of test results must be available to the inspector.

● Approval of Class 2 Transformer Loads.

Unlisted Class 2 transformer **load components** are permitted when **all the following items are met**:

1. The Class 2 transformer is listed.
2. The wiring method used complies with NEC 725.
3. The secondary voltage of the Class 2 transformer does not exceed 30 volts ac or 42.4 volts peak open circuit voltage.
4. The secondary side of the Class 2 transformer is protected by a 5 ampere maximum fuse or a fuse derived by dividing 100 VA by the secondary voltage whichever is less.
5. The Class 2 circuit does not supply life safety equipment or emergency egress, such as fire alarm or rescue systems.
6. The components and devices must be totally within the secondary of the Class 2 circuit (that is, the device is not in any way electrically connected to any other electric source).
7. A permanent marking located as near as possible to the transformer must indicate the size and type of the replacement fuse.

● Can a Condulet or Box be Direct Buried Underground?

NEC 370-29 states that condulets/boxes must be accessible without removing any part of the building or, in underground circuits, without excavation sidewalks, paving, etc. The **exception** states listed condulets/boxes may be buried if covered by gravel, light aggregate, or non-cohesive granulated soil and effectively identified and accessible for excavation.

● Amusement Ride Labels.

Electrical Inspection Field Supervisors will be involved in all pre-season electrical inspections. If the "Ride Compliance Label" has been previously affixed, go to the "Basic Inspection Checklist." If the "Ride Compliance Label" has not been previously affixed, the department will use one of the following methods to determine whether rides and equipment meet a minimum safety standard. The Field Supervisor will determine which procedure is appropriate for the inspection of each individual ride or ride equipment.

1. Inspect the entire ride for compliance with the Edition of the National Electrical Code (NEC) and Washington Administrative Code (WAC) in effect at the time the ride was manufactured or had a major alteration.

2. Inspect the amusement ride control panel(s) to UL 508 when **all components are listed or recognized** by an electrical testing laboratory approved by the department. Inspect the remainder of the ride for compliance with the with the Edition of the National Electrical Code (NEC) and Washington Administrative Code (WAC) in effect at the time the ride was manufactured or had a major alteration.

3. Advise the owner obtain a field evaluation performed by an electrical testing laboratory recognized by the department for the control panel(s) when **all components are NOT listed or recognized** by an approved electrical testing laboratory. The electrical inspector inspects the other wiring on the ride for compliance with the NEC and WAC in effect at the time the ride was manufactured or had a major alteration.

4. Advise the owner to obtain a field investigation from an electrical testing laboratory accredited with the department on the entire ride when **components are not listed or recognized** by an approved electrical testing laboratory.

5. Each amusement ride or structure will have a metallic "Ride Compliance Label" (yellow label with black lettering) applied to the inside of the control panel enclosure, or other location where the label is protected from damage. This will be done only after the ride or structure has been inspected using one of the four procedures listed above and is found to be in compliance with appropriate safety standards. Maintenance type corrections are not required to be completed before the metal compliance sticker is affixed. The supervisor/lead inspector must approve the application of the ride compliance label. On an individual, case-by-case basis, the department may allow the ride to operate until the "Ride Compliance Label" has been applied.

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Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Ronald E. Fuller, Acting Chief Electrical Inspector **Vol. 3 No.3** **March 2000**

Electrical code issues and answers.

● Stakeholder Meeting Scheduled

Stakeholders meetings have been scheduled well in advance to help all attendees better plan their busy schedules and agendas. This is your chance for input. You can also receive 4 CEU credits for attending the meeting and satisfactorily completing the take home exam that will be available at the meeting. The meetings now scheduled are as follows:

Tacoma ...March 29 , 6:30 – 8:30 PM
Moore Branch – Tacoma Public Library
215 South 56th
Tacoma, WA

● Mounting Electrical Devices and Equipment on T-Bar Ceilings

Questions have been raised on the application of supporting electrical equipment on t-bar ceiling tiles. Installers have mounted devices, such as smoke detectors, to ceiling tiles without back-boxes or other support.

Some fire alarm devices are listed to be installed without back-boxes. Some have mounting plates that appear to be for mounting to electrical boxes, only. Installation instructions may reveal that the device is permitted to be secured to the mounting plate without a back box.

Use of this type of device is identified in the following code articles:

- NEC 336-18, exception No. 2: *"A wiring device identified for the use, without a separate outlet box, incorporating an integral cable clamp shall be permitted where the cable is secured in place at intervals not exceeding 4 ½ ft..."*
- NEC 300-15(e) States that *"A wiring device with integral enclosure identified for the use, having brackets that securely fasten the device to walls or ceilings of conventional onsite frame construction, for use with nonmetallic-sheathed cable, shall be permitted in lieu of a box or conduit."*

The use and application of these devices is permitted where proper support is provided for the cable and device (NEC 110-13:*"Electrical equipment shall be firmly secured to the surface on which it is mounted.")*. Firm support is accomplished when cables are supported at proper intervals and the device is supported by structural building members.

Because of their design, ceiling tiles do not provide firm support for electrical equipment. Equipment or devices identified for mounting with or without a back box must be directly supported by a structural building member.

● Physical Protection of Cables

There has been considerable confusion over the requirements of protection for cables subject to physical damage. There are numerous sections of the National Electrical Code where different requirements apply to various cable types and installations.

NEC 300-4 states that *"Where subject to physical damage, conductors shall be adequately protected"*. Other articles in the NEC go into further detail on what methods of protection must be afforded for specific types of cable and their location of installation.

If in the judgment of the inspector, exposed metallic or non-metallic cable is subject to physical damage; it must be protected up to a height of **ten feet**. If other articles in the NEC have specific requirements, they take precedence.

● WAC 296-46 and WAC 296-401A To Be Revised

Notice to make modifications to WAC 296-46 and WAC 296-401A have been filed. The department is interested in stakeholder input for proposed changes to these WAC's. Anyone with suggested changes should write the Chief Electrical Inspector providing proposed changes with justification for the change. The Chief's address is: PO Box 44460, Tumwater, WA 98504.

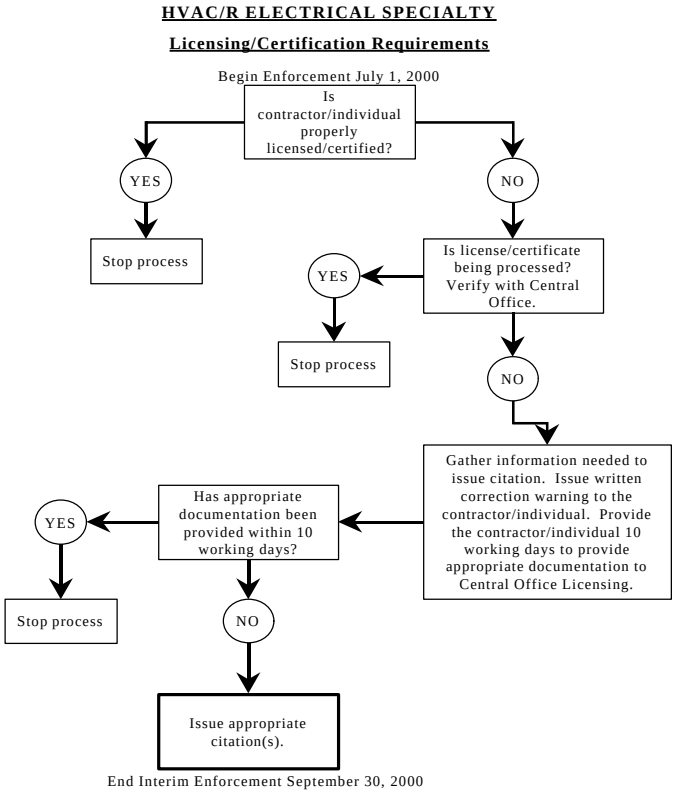
● References To Testing Laboratories

Electrical products require third party certification in the State of Washington. The required certification may be achieved by listing or field evaluation. It has been common to refer to certification of products as "UL approved", "UL'd" or other terms denoting accredited testing laboratory approval. The department has given accreditation to sixteen testing laboratories for testing and/or evaluating products against ANSI standards. It is not completely accurate to refer to recognition of electrical product safety as "UL approved" when other testing labs are accredited to approve products. More accurate terminology would be "third party approved", "listed", or other generic terminology that does not lead to misunderstanding of who may "list" or "evaluate" products. A complete list of testing laboratories accredited with the department can be obtained at www.wa.gov/electrical/testlab.htm.

● March 1, 2000 HVAC/R Application and Grandfathering Period Extended

The Director of the Department Of Labor and Industries has extended the time allowed for HVAC/R contractors and installers to register with the department. The extension applies to WAC 296-46-930(2)(e)(III) and WAC 296-401A-140 (7). The full text for these extensions is available on the electrical web site.

The department will continue to accept proof of experience for HVAC/refrigeration contractors and installers until October 1, 2000. The department will continue to accept proof of experience for HVAC/refrigeration contractors and installers until October 1, 2000, however non-compliance after June 30, 2000 may result in a citation. The enforcement practices for non-compliance are outlined in the diagram below. If a citation is issued for not complying with the HVAC/R licensing/certification requirements the contractor, administrator or technician will lose all "grandfathering" exemptions.



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Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Ron Fuller, Acting Chief Electrical Inspector **Vol. 3 No. 2** **February 2000**

Electrical code issues and answers.

Electrical Connections

This is the third in a series of articles addressing the most frequently written electrical code corrections. The integrity of electrical connections is one of the most important elements of any electrical installation. Article 110-14 of the National Electrical code is often cited. When making electrical connections the installer must remember the following:

- Don't mix copper and aluminum conductors in the same terminal or splicing connector unless it is listed for the purpose.
- Use lugs rated for copper if using copper conductors and aluminum rated lugs for aluminum conductors.
- Use pressure connectors at wire terminations except that #10 awg conductors may terminate by means of screws or studs and nuts with upturned lugs.
- When multiple terminations are made under one lug the terminal must be rated for the combination of multiple conductors used.
- When making a splice the splicing device must be covered with insulation equivalent to that of the conductor that is being spliced.
- When making a direct burial splice use a splicing means that is rated for direct burial.
- When installing electrical circuits or feeders the lowest temperature rating of the circuit breaker, wire, or wire terminal determines the allowable ampacity of conductors in Table 310-16.

This article is intended to help identify general provisions for terminating conductors found in Article 110-14 of the National Electrical Code but should not be substituted for study of this code to fully understand all requirements.

Provisions for Grounding Snap Switches and Faceplates

NEC 380-9(b) states *" snap switches, including dimmer switches, shall be effectively grounded and shall provide a means to ground metal faceplates, whether or not a metal faceplate is installed."*

Snap switches are considered effectively grounded under any of the following conditions:

1. Mounting the switch to a metal box with metal screws. (This method of grounding the switch requires direct metal contact between the yoke of the switch and the box.)
2. Installation of self-grounding switches listed for the purpose.
3. Mounting the switch to a nonmetallic box, which has integral means to accomplish grounding.
4. Terminating the equipment grounding conductor to the equipment ground terminal on the switch.

The exception to this rule is where no grounding means exists within the switch box or where the wiring method does not include an equipment grounding conductor. This exception applies to the replacement of switches only. Provisions for grounding the switch must be available on new installations. When this exception is allowed and exercised a nonconductive faceplate is required.

What impact does this have on nonmetallic cable systems?

WAC 296-46-336 requires that *"all electrical equipment grounding conductors for nonmetallic cable systems shall be completely made up at the time of the inspection"*. Switches are now required to be grounded. At the time of rough-in inspection non-metallic switch boxes must have equipment grounding conductors made up with a "grounding pigtail" available to terminate on the grounding terminal of the switch.

● Attention Electrical Trainee

One of the more common problems with affidavits submitted to the department for training hours is that the hours have been reported in the wrong category. **WAC 296-401A-500** requires that training hours must be reported accurately. Accurate reporting of individual trainee hours requires documenting the correct number of hours and reporting hours in the correct specialty category.

Reporting hours in the commercial/new industrial category when working as a maintenance electrician is a common mistake. Typically these trainees should place their hours in the non-residential maintenance specialty category. Maintenance trainees may compile electrical hours in the commercial/new industrial category only when the work is on **new electrical installations.**

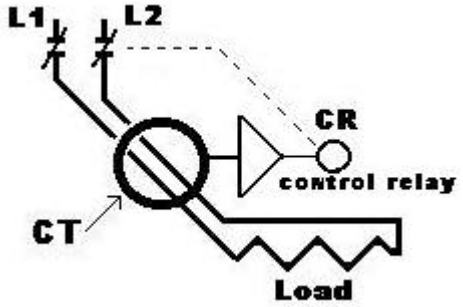
RCW 19.28.210 requires electrical work permits for all new installation work of any kind, in any category. This statute also requires electrical work permits for most of the work classified as non-residential maintenance except as exempted in WAC 296-46-495 (7). In the absence of permits and inspections it becomes difficult to establish creditable training hours.

If the reported hours have been worked without valid electrical work permits or other acceptable verification methods, the audit group may not be able to verify and credit hours. The results are often non credit of hours to the trainee and the issuance of citations to the company for non-compliance with the electrical statute. The company may be required to purchase electrical work permits for all uninspected electrical work. If the work hasn't been done as claimed by the trainee and the affidavit is false, citations and other penalties may be accessed as described in Rule 296-401A-550 of the Washington Administrative Code.

Trainees, you must maintain a current trainee card at all times. You must always work with proper supervision and in proper ratio. **You are responsible** for submitting honest and accurate affidavits if you want the hours credited to your file. If you have any questions please call the Audit Group at (360) 902-4245 or (360) 902-5742.

● How does a GFCI circuit work?

GFCI protected circuits are becoming more prevalent in the electrical industry and having a thorough understanding of their operation is essential. The basic function of a GFCI is to monitor the current delivered to the load. If the amount of current delivered is more than the amount of current received back (by 4 to 6 milli-amps), the GFCI trips disconnecting all power from the load. This method is based on Kirchhoff's Current Law (I in - I out = 0) that states that the sum of the current in a closed loop must equal zero. The most common way to achieve this monitoring is with a CT (current transformer).



When current flows through a wire it develops a magnetic field in one direction and an opposite magnetic field when the current flows in the opposite direction. When these two fields come in close proximity to each other, they cancel each other out if they are equal, and opposite, in field polarity. When the current in L1 (supply) and the current in L2 or neutral (return) are equal, there is no net magnetic field present. With no magnetic field present, the CT will produce no current, telling the GFCI sensor circuit that the circuit is balanced with no ground fault current.

Ground fault circuit interrupters are proven to be an effective tool to significantly improve the safety of personnel. **Monthly checks of GFCI products are required to verify that the device is operating properly**. If upon testing the GFCI it is found to be defective it must be replaced. Defective ground fault circuit interrupters may allow current to flow in the circuits they are installed in even when the ground fault sensing capability of the device is no longer functioning.

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Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Ron Fuller, Acting Chief Electrical Inspector **Vol. 3 No. 1** **January 2000**

Electrical code issues and answers.

Janet Lewis Leaves Labor and Industries

Janet Lewis, Washington's Chief Electrical Inspector since April 1997, recently submitted her resignation to the department. Many of our customers may be unaware that in addition to being a journeyman electrician, electrical administrator, and former electrical contractor, Janet is a graduate of the University of Washington Law School and has been a member of the bar since June 1996. She is looking forward to some much needed time off before she returns to work in private industry.

During her tenure as Chief, Janet has challenged the traditional thinking of the electrical program to attain new levels of service and professionalism that our customers rightfully expect.

Janet played a major role in the development of the electrical audit program and guided the electrical program through Labor and Industries' internal structural reorganization. She improved communication with our customers and consistency in electrical inspections by establishing the electrical section Internet web site and the monthly *ELECTRICAL CURRENTS, Code Guidance from the Department of Labor and Industries* newsletter. She updated, rescinded, or incorporated into electrical WAC rules many of the electrical section policies and enforcement procedures.

Janet helped to bring the electrical industry "on-line" by enabling electrical inspection requests via the Internet. The foundation has been laid for future on-line permit purchasing and retrieval of inspection results. She co-sponsored the CREDITS program to put state-of-the-art technology into the field with electrical inspector mobile computers to record inspection results and access electrician certification and contractor registration and licensing data on the job site.

In May 1999 Gov. Gary Locke named Janet as a recipient of the 1999 Governor's Distinguished Management Leadership Awards. L&I Director Gary Moore nominated Lewis for the award stating, *"Janet has taken a troubled program and turned it around. A program that once lacked trust and processes to measure itself is now recognized as a reliable partner for its customers and one that consistently monitors its progress. This is a tribute to Janet's tireless efforts to improve a program vital to the safety of Washington's citizens and business community."*

We in the electrical program will miss Janet's leadership, but we wish her continued success in her new venture.

Acting Chief Electrical Inspector appointed

Ron Fuller has been appointed as the Acting Chief Electrical Inspector to replace Janet Lewis who is leaving in January. Ron has been with the electrical program for over eight years, as an electrical inspector, electrical plan reviewer, and electrical technical specialist. Before coming to L&I, Ron was the owner of a successful electrical contracting firm in Vancouver for five years. Ron also has extensive field construction experience and did electrical design for an engineering firm in Oregon. Ron will also be receiving a BA in Management this next year from the Evergreen State College. In addition Ron has been involved in effective public policy development and implementation as the volunteer Chair, for the City of Ridgefield Planning Commission.

So as you can see, Ron brings many skills and background experience to the job. Please welcome Ron as our new Acting Chief Electrical Inspector.

Stakeholders Meetings are Scheduled For 2000

Stakeholders meetings have been scheduled well in advance to help all attendees better plan their busy schedules and agendas. This is your chance for input. You can also receive 4 CEU credits for attending the meeting and satisfactorily completing the take home exam that will be available at the meeting. The meetings now scheduled are as follows:

Bremerton ...January 18th , 6:30 – 9 PM
Bremerton L&I Service Location
500 Pacific Ave., Suite 400
Bremerton, WA

Pt. Angeles...February 24th, 6:30 – 9 PM
Port Angeles City Council Chambers
321 East 5th Street
Port Angeles, WA

Is Ground-Fault Protection of Generator Feeders Required?

Article 215-10 states that "*each feeder disconnect rated 1000 amperes or more and installed on solidly grounded wye electrical systems of more than 150 volts to ground, but not exceeding 600 volts phase to phase, shall be provided with*

ground-fault protection of equipment in accordance with the provisions of Section 230-95." Does this requirement extend to generator feeders? In general it does. However the answer depends on the type of equipment to which the generator is connected. There are three cases where Ground-fault protection (GFP) is either prohibited or not required.

(1) In Health Care Facilities where an essential electrical system is required ground fault protection of feeders is prohibited "*between the on-site generating unit(s) described in Section 517-35(b) and the essential electrical system transfer switch(es),* (NEC 517-17(a)(2)).

(2) On Emergency Systems *"The alternate source for emergency systems shall not be required to have ground-fault protection of equipment with automatic disconnecting means "*(NEC 700-26). A ground-fault indicating system is required for a grounded wye emergency system operating at more than 150 volts and a circuit protective device rated 1000 amperes or more. (NEC 700-7(d))

(3) Legally Required Standby systems *"shall not be required to have ground-fault protection of equipment."* (NEC 701-17)

● Dwelling Unit Receptacle Outlets

One of the most common code corrections issued by the department is NEC 210-52. This article addresses locations where receptacle outlets are **required**. The general provision, found in NEC 210-52 (a), requires receptacle outlets in every kitchen, family room, dining room, living room, parlor, library, den, sunroom, bedroom, recreation room, and similar rooms or areas of a dwelling unit. **This newsletter article does not replace study of NEC 210-52 to grasp a complete understanding of this code.** The following are mandatory locations of dwelling unit receptacle outlets:

General

• Within 6 feet of breaks in wall space	• In every 2 foot wall space
• Spaced so no point along the floor line in any wall space is more than 6 feet from an outlet	• Floor receptacles must be within 18 inches of the wall to be counted as a required outlet

Small appliance circuits

• Two or more circuits required to serve receptacles in kitchen, pantry, breakfast room, dining room Both circuits must appear on the countertop	• The two or more small appliance circuits can only serve receptacle outlets in the kitchen, pantry, breakfast room, dining room

Countertops

• In wall counter spaces that are 12 inches or wider	• Spaced so that no point along the wall line is more that 24 inches from an outlet
• At each island or peninsular counter space with a long dimension of 24 inches or greater and a short dimension of 12 inches or greater	• Installed not more than 18 inches above the countertop, not face up in the countertop, and readily accessible

Other required outlet locations

• **Basements and garages require** that at least one outlet be installed. Outlet not required in detached garage unless power is run to the building	• **Outside** one and two family dwellings accessible and not more that 6 ½ above grade one in front and one in back of dwelling
• **Hallways** of 10 ft or more in length require a receptacle outlet	• **Bathrooms** on wall adjacent to the sink and within 36 inches of the sink
• **Laundry areas** require at least one receptacle outlet	• **Refer to NEC 210-8** for gfci requirements

● Manufactured/Mobile Home Service Disconnect

NEC 550-23(a) requires the service equipment to be within sight from and not more that 30 feet from the exterior wall of the mobile home it serves. The service may be located elsewhere when a second service rated disconnecting means is provided that meets the "within sight from" and "not more that 30 feet from" requirement. Grounding at the additional disconnecting means must be in accordance with NEC 250-32 which allows running either an equipment grounding conductor to the second disconnect or not providing an equipment grounding conductor and bonding the neutral at the disconnect. Both methods require grounding electrodes at the service and the second disconnect.

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Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 2 No 12** **December 1999**

Electrical code issues and answers.

● Happy Holidays to One and All

Another year has come and gone as the department continues to join with its electrical stakeholders to " Keep Washington Safe." As we continue our partnership into the new millennium, the department will remain focused on public safety and customer service.

We have implemented new technology and the New Year promises even more customer friendly innovations. Customers can now request inspections over the Internet, and soon contractors will be able to access the results of inspection over the Internet. The department is also looking at the possibility of contractors being able to purchase permits via the Internet.

This is the end of the second year of the Electrical Currents Newsletter that we began in January of 1998. It has been a very useful tool to communicate clearly with customers and provide clear code interpretations for both contractors and inspectors.

Best wishes for a safe and happy holiday season from Janet Lewis, Chief Electrical Inspector and Technical Specialists, Ron Fuller, Gary Gooler, and Mike Vert.

● Upcoming Electrical Stakeholders Meeting -- December 13, 1999 / 7:00 PM to 9:00 PM

This is your chance for input! You can also receive **4 CEU** credits for attending the meeting and satisfactorily completing the take home exam that will be available at the meeting.

Where: Department of Labor and Industries
Tukwila Service Location, (206) 248-6630
12806 Gateway Drive
Tukwila, WA

● Can a Sign Disconnecting Means be located on the Inside of a Sign?

A sign's disconnect may be located on the inside of the sign if the operator is not exposed to live parts when operating the disconnect. NEC 600-6 establishes that signs and outline lighting systems *"...shall be controlled by an externally operable switch or circuit breaker…" and* Article 100 defines externally operable as: *"Capable of being operated without exposing the operator to contact with live parts."* NEC 600-6(a) says the switch or circuit breaker must be "...within sight of the sign or system controlled **or,** when the external disconnect is located out of sight of the sign, it must *"...be capable of being locked in the open position."*

The department has been inspecting many electric signs where the cover must be opened or dismantled to reach the sign disconnect. When inspecting signs with the disconnect switch inside the cover, the inspector must have access to verify compliance with Article 600. This may mean the installer must provide means (e.g. a bucket truck or extension ladder) for access. There are some signs where the sign operator is not exposed to live parts when accessing an internal switch (i.e. a sign with completely enclosed internal lighting fixtures). Because of exposure to open electrical terminals, lamp sockets, and etc., most sign installations require the sign disconnect to be located outside the sign enclosure.

● Requirements For Generator Grounding Electrode

With the large number of generators being installed at this time please keep the requirements of NEC 700-8(b), 701-9(b), 702-8(b) in mind. These articles require a **sign or plaque at the point of the connection** between the grounding electrode, the normal system grounded conductor (neutral), and the emergency system grounded conductor. The sign must identify all emergency and normal sources connected to the grounding electrode. This is required in a majority of generator installations because the neutral is usually solidly connected at the transfer equipment (see NEC 100 definitions) and is not a separately derived system.

If a problem develops in the normal panel (the location where both the normal and emergency systems connect to the grounding electrode conductor), resulting in a loss of normal power, care must be taken to not remove the grounding electrode conductor, main bonding jumper, grounded conductor, or the equipment grounding conductor

connections at the main panel. The required sign plays an important role in notifying the person making the repairs that a potential problem exists. An unsafe condition (ungrounded system) will be created if these connections were to be removed.

● Top Ten Corrections

In October the department compiled a list of the top ten most often written National Electrical Code violations in Washington. The code article that topped the list was NEC 110-3. The Revised Code of Washington, RCW 19.28.010, requires all materials, devices, appliances, and equipment used in electrical installations to conform to applicable standards or be indicated as acceptable by the established standards of an electrical product testing laboratory accredited by the department. NEC 110-3(a) describes considerations that must be taken into account when judging the suitability of equipment. Listing and labeling is a very common method used to identify products suitable for specific applications, purposes, or environments. NEC 110-3(b) requires listed and labeled equipment to be installed and used in accordance with any manufacturer's instructions included in the listing and labeling. It is very important for electricians and inspectors to be sure electrical equipment is installed and used for the purpose it was designed and manufactured.

● NEW POLICY – 99-16 – Scope of Work for Limited Energy System (06) Specialty Contractors and Electricians

A new policy has been developed to address confusion over the licensing requirements for limited energy systems. Policy 99-16 has been developed and was approved by the Electrical Board at their last meeting to clarify the definition of the scope of work for limited energy (06) contractors and installers. Please refer to the October, 1999 issue of the Electrical Currents for further clarification of limited energy and low voltage wiring issues.

Policy 99-16 says:
"The definition of the (06) specialty contractor is found in WAC 296-46-930 and the definition of the (06) specialty electrician is found in WAC 296-401A-140. Both sections limit this specialty to:

> …the installation of signaling and power limited circuits and related equipment. This specialty includes the installation of fire protection signaling systems, intrusion alarms, non-utility owned communications systems, and such similar low energy circuits and equipment.

The intent of the Electrical Board and the department when the (06) Limited Energy System was established was to restrict the (06) specialty to installations of "low energy circuits and equipment." This specialty is restricted to Class 1 power-limited circuits (30 volts maximum), Class 2 circuits (30 volts maximum) and Class 3 circuits (up to 100 volts maximum).

This specialty cannot install line voltage (110 volts to 600 volts) Class 1 non-power limited remote control and signaling circuits or other line voltage branch circuits or feeders. A contractor must hold a general electrical license (01) and employ certified (01) journeymen to install line voltage, Class 1 non-power limited remote control or signaling circuits or other related branch circuits or feeders. This specialty can replace line voltage like-for-like components in HVAC/Refrigeration equipment consistent with the limitations of the new HVAC/R (06A) limited energy specialty."

● When Are Ground Rods Required?

There has been some confusion regarding the requirements for ground rods (made electrodes). There are only two instances where ground rods, or other made electrodes, **may** be required:

(1) Supplementary protection for underground metal water pipe: When metal underground water pipe is used as an electrode (NEC 250–50 (a)) it must be supplemented by another electrode (NEC 250–50 (a) (2)). The supplemental electrode can be any other electrode on the premise including or excluding ground rods. An example would be when both a water pipe electrode as provided in NEC 250–50 (a) and a building steel electrode as provided in NEC 250–50 (b), exist together on a premise. In this case "made and other electrodes", including ground rods, are not required.

(2) No existing grounding electrode: When no grounding electrode exists, a made electrode such as ground rods must be installed. Examples of installations that require a made electrode include a temporary service, a non-metallic structure with non-metallic underground water pipe, or other structure(s) where a grounding electrode does not exist.

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Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 2 No. 11** **November 1999**

Electrical code issues and answers.

● Have You Moved? Did You Remember To Notify The Department?

Failure to provide the department of your address change is the most common reason individuals fail to renew their electrician certificates or trainee cards. The licensing section often hears the complaint; "I didn't get notified for renewal." Unfortunately, that happens, since renewal notifications are often not forwarded by the postal service. Failure to renew your certificate within ninety days of the expiration date will result in revocation of the certificate. You will then have to purchase a trainee card, reapply, and retake the examination to continue working. Reciprocity agreements are not valid for anyone who has previously held a Washington certificate. These individuals would also be required to reapply and retest in Washington. A word of warning, anyone working with an invalid certificate will be subject to a citation. **Keep the department informed of all address changes!**

● HVAC/R Examination Deadline Rapidly Approaching

The deadline for qualifying for the new HVAC/Refrigeration limited energy technician examination is **March 1, 2000**, for applicants seeking to use previous experience to qualify. The following steps must be followed:

- Submit to the department a signed and notarized letter from employer(s) stating that you have "performed HVAC or refrigeration equipment installation, service, or repair that includes limited energy control wiring."
- Employer contractors must state in the letter that they were engaged full time in the business of HVAC/R equipment installation or repair work and must supply copies of their RCW 18.27 contractor's registration or business license for the time period being certified for their employees.
- The department will also consider applications from those individuals who have performed work in this specialty category as regularly employed maintenance staff of property owners (commercial, industrial, manufacturing facilities, public facilities) normally exempt from electrical certification.
- Technicians must submit their qualifying application letter and all of the following documents and pay the appropriate fees at the same time: the **technician examination application ($27.00), original specialty certificate fee ($42.50), and a third-year specialty trainee card application ($20.75), prior to approval to sit for the examination.** The application and original certificate fees are paid only once, training certificates must be renewed annually. An additional examination fee (or re-testing fee if necessary) is paid directly to the testing company not L&I.
- Applicants with at least two years of approved experience qualify for a third -year HVAC/R trainee card which allows them to work alone and to supervise and verify the training hours for first and second year trainees.
- All individuals submitting qualifying applications prior to March 1, 2000 will remain qualified to take the exam and have until **March 1, 2002** to pass the exam. "Third year HVAC/R trainees" who fail to pass the exam by March 1, 2002 will no longer be allowed to work without supervision or supervise others.
- **After March 1, 2000**, applicants must show at least 4000 hours of experience per WAC 296-401A-210 as a certified trainee installing, servicing, or repairing HVAC or refrigeration systems under the direct supervision of an HVAC/R limited energy technician, a limited energy specialty electrician, or a journeyman electrician.
- ***What if I don't have two years experience and can't qualify for the third year card?*** Applicants can receive a first-year trainee card by paying the ($20.75) training certificate fee. If they have a notarized letter from their employer showing at least one year of experience, they can receive a second-year trainee card for the same fee.

● Wiring Methods to Swimming Pool Motors.

NEC 680-25(c) states that *"Pool-associated motors shall be connected to an equipment grounding conductor sized in accordance with Table 250-122 but not smaller than No. 12. It shall be an insulated copper conductor and shall be installed with the circuit conductors in rigid metal conduit, intermediate metal conduit, rigid nonmetallic conduit, or* ***Type MC cable listed for the application****."*

At the time of this writing there is at least one MC cable manufacturer claiming to have "swimming pool cable". There currently is no standard in place offering criteria for MC cable evaluation that will allow MC cable to bear a

listing mark specifically listing it as suitable for connection of pool associated motors.

This article allows the use of EMT on or within buildings and liquidtight flexible metal and flexible nonmetallic conduit where flexible connections are necessary at or adjacent to the motor. It is important to remember that the minimum size for the equipment grounding conductor in any raceway used to feed pool associated motors is #12AWG and it must be an insulated copper conductor.

The wiring methods for pool associated motors in the interior of a one family dwelling or a building associated with a one family dwelling are less restrictive. Any wiring method recognized in Chapter 3 of the NEC that contains a copper equipment grounding conductor that is insulated or covered can be used. It too must be #12AWG copper minimum. Flexible cord can only be used in accordance with NEC 680-7.

● Department to Offer CEU's for Electrical Stakeholder Meetings

The department has received approval from the electrical board to offer four (4) continuing education units to persons attending scheduled electrical stakeholder meetings and satisfactorily completing a twenty-five question exam at home. Electricians will receive four CEU's only after **both** attending the 2 hour meeting and passing the take home test with a score of 70% or higher. **No CEU's will be awarded to those who do not comply with both requirements and only 4 CEU's for Stakeholder meetings will be awarded in any fiscal year (July 1 to June 30)**.

Electrical stakeholder meetings are scheduled in the fall and winter months when the construction business usually slows down. All meetings are attended by someone from the Chief Electrical Inspector's staff. These meetings provide an excellent opportunity for contractors, electricians, and trainees to ask questions and provide input to the department. Contact your local inspection office about scheduling of stakeholder meetings in your area.

● Computer Rooms

Article 645 of the National Electrical Code entitled "Information Technology Equipment" applies to information technology rooms that comply with all six of the conditions listed in NEC 645-2.. Those installations that do not meet all of the 645-2 requirements cannot use this Article of the code, but must meet other applicable requirements found elsewhere in the code. No other part of Article 645 will apply to installations that do not first meet the conditions of NEC 645-2.

● Grouping of Manufactured Home Disconnects.

NEC 230-40 requires that each service drop or service lateral supply only one set of service entrance conductors. Exception Number 3 allows a single family dwelling unit and a separate structure to have one set of service entrance conductors run to each, when supplied from a single service drop or lateral. NEC 230-71 permits up to six disconnects for each service allowed by NEC 230-2 and each set of service entrance conductors allowed by Exceptions 1 and 3 in NEC 230-40. NEC 230-72 requires those service disconnects to be grouped in one location.

Where a manufactured home and a separate structure on residential property have their respective service disconnects supplied from a single service drop or lateral and the installer **chooses** to locate both disconnects in or on the separate structure, **the disconnects must be grouped together in one location.** Since the service disconnect for a manufactured home must be within sight of the mobile home, the two service disconnects are most commonly installed together on the outside of the separate structure.

● Receptacle Loads Added to Lighting Demand Factors.

In other than dwelling units, general use receptacles must be calculated at 180va each per NEC 220-13. The general use receptacle load may be added to the lighting loads and may have the demands of Table 220-11 applied to them.

When using Table 220-11, the Lighting Load Demand Factors, care must be used to only apply the demands to receptacles that are in areas described in the table. In Table 220-11, both the "Hospitals" and "Hotels-Motels" headings have an asterisk note (*) that states the table applies only to areas where the entire lighting is not likely to be used at one time. In a hospital, the only areas that the demands shown in Table 220-11 for lighting and receptacles could be applied would be patient rooms and storage rooms since most other areas have continuous lighting loads. In hotels and motels, guestrooms and storage areas would be considered non-continuous. For general use receptacles in other areas, the demands of Table 220-13 may still be applied to them.

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Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 2 No. 10** **October 1999**

Electrical code issues and answers.

● "Wireless" Security Systems.

The department has been asked to clarify what systems qualify as wireless security systems. Any system that requires field installation of conductors or termination of conductors on equipment is not "wireless." A typical Class 2 security system requires wiring to be field installed (sometimes in wall or ceiling cavities) between a listed Class 2 transformer and the control enclosure of the system. For this reason the department has not considered these systems wireless and has consistently required that a certified individual working for a licensed electrical contractor perform any field wiring involved with these systems. This type of system also requires a permit and inspection.

It has come to the attention of the department that the systems described above are being installed by non-certified individuals without permits and inspections. RCW 19.28.120 requires an electrical contractor's license to install wires and equipment to convey electrical current. RCW 19.28.620 requires that the licensed electrical contractors employ certified individuals to make installations. RCW 19.28.510 requires each individual who performs these installations to hold a certificate of competency. Firms and/or individuals that violate the law are subject to civil penalties.

Only systems that are totally plug-and-play (listed systems with a factory installed cord and plug) which require no field installation or concealment of wires could be considered wireless. Check with your local inspection office prior to installation of systems you believe are "wireless." **This clarification by the Chief Electrical Inspector supersedes any previous interpretations issued by the department.**

● Limited Energy and Low Voltage Wiring Issues.

What are the voltage and energy limitations for the Limited Energy System (06) Specialty and the HVAC/Refrigeration Limited Energy System (06A) Specialty? The intent of the Electrical Board and the department when the (06) Limited Energy System specialty was established was to restrict this specialty to installations of "low energy circuits and equipment." The **(06) Specialty** is restricted to Class 1 power-limited circuits (30 volts maximum), Class 2 circuits (30 volts maximum) and Class 3 circuits (up to 100 volts maximum). The **(06A) Specialty** is limited to installations of Class 2 (30 volts maximum) control circuit cables and replacement of like-for-like line voltage components in HVAC/R equipment only. (See June, 1999 Electrical Currents).

Can the (06A) HVAC/Refrigeration contractor and technician perform service and repair work on equipment located in buildings that exceed the three-floor limitation? Yes. The intent of WAC 296-46-930 and WAC 296-401A-140 rules are to allow the (06A) specialty to service, maintain, or repair existing HVAC/R equipment and low voltage control systems located in commercial buildings regardless of the number of floors. However, this specialty is restricted to installations of new low voltage Class 2, HVAC/R, control systems in commercial buildings three floors and under, except for residential occupancies.

Are boxes required for splices of Class 1, 2, and 3 conductors? NEC 725-3 states that only those sections of NEC 300 specifically referenced in NEC 725 shall apply to Class 1, Class 2, and Class 3 circuits. Outlet boxes must be used for Class 1 circuits and fire alarm circuits [NEC 760-25, 760-30(a), and 760-52(b)(1)]. Also, all low-voltage and limited-energy devices in fire walls, floors, and ceilings must be installed in metal boxes or fire rated nonmetallic boxes [NEC 300-21].

Can cable be strapped to conduit and does it require sleeving for protection? If the cable is used for purposes that classify it as a Class 2 or 3 system conductor, it cannot be strapped to conduit according to NEC 725-54(d), unless it meets exception NEC 300-11(b)(2). If the cable is used to interconnect computers for the purpose of exchanging data over a LAN, it must be installed in accordance with NEC 725, Class 2 or 3 circuits. Where cable is used for communications purposes under Article 800, raceways shall not be used to support communications cables NEC 800-52(e). If coax is used for purposes in NEC 820, raceways shall not be used as a means of support NEC 820-52(e). A general rule for all cables is that if the cable is exposed to physical damage, it must be protected with conduit sleeving.

Must material and equipment be listed by an accredited products testing laboratory? Yes. Listed material and equipment must be used when a published safety standard exists to test the equipment and when two or more manufacturers list the product, WAC 296-46-100. However, if the product is not listed by two or more manufacturers or is custom-built, third-party field evaluation of the equipment will be required.

Can low-voltage and limited energy wire be supported by T-Bar ceilings? WAC 296-46-30001 does not allow electrical wiring to be secured to ceiling support wires. However, independent support wires may be installed and used to secure low voltage wiring. Low-voltage and limited energy wiring must be supported by the building structure in such a manner that cables will not be damaged by normal building use. Cables cannot lie on top of ceiling tiles but must be properly supported.

● Non-compliance Citations Issued in 1999.

1999 has been a busy year for electrical non-compliance enforcement in the state. Inspectors so far this year have issued 150 citations for performing electrical work without a contractor's license, 335 citations for working without an electrician certificate, trainee card, or working without the proper ratio of journeymen to trainees. Electrical administrators have been issued 288 citations this year for failing to perform their legal duties as administrators. The department also issued 266 citations for other violations of RCW 19.28. Please review the requirements of RCW 19.28, WAC 296-46, and WAC 296-401A to avoid future violations that result in citations and monetary penalties.

● Mobile Computing for Field Inspectors.

The department has begun the preliminary work needed to provide Electrical Field Inspectors with mobile, handheld computers. Handheld computers will provide the inspector with several new tools that will eliminate paperwork, provide the inspector with a much greater detail of inspection permit history on the jobsite, and reduce entry errors made under the current methods of recording inspection activity. Fujitsu 2300 handheld computers with truck stands have been ordered. Software to download and upload inspection data into the EPS system is being developed and will be tested in January. All field inspectors will be provided with individual training on the use of the new computers during February and March. Our goal is full deployment of the new system by the end of the first quarter of year 2000.

● Internet Electrical Inspection Request System (EIRS) is a Success, Sign Up Now!

Last month we told you about the roll out of a new service, EIRS, offered to contractors who purchase electrical permits. The service provides contractors the ability to request inspections through the Internet, 24 hours a day, 7 days a week. The customers using the system LOVE IT. The general statement from contractors using the system is, "This is great!" We have received applications from some of you, but know there are more of you out there who can benefit from this service. If you want to sign up go to the electrical web site, click on the EIRS link to print the application, or pick up the phone and call (360) 902-5252 to request a hard copy of the application to be mailed to you.

● New Affidavit of Experience Forms for Trainees and Certification Applications.

The department has redesigned the affidavit of experience form for electrical trainees and electrician certification applications. Effective January 1, 2000, the department will **no longer** accept affidavits submitted on forms with a revision date prior to 2-99. The revision date can be found at the bottom left hand corner of the form.

The major change to the form is the requirement of the applicant's notarized signature **in addition** to the verifying contractor or designated individual's signature. Affidavits received without both notarized signatures will be returned without review by Central office staff.

These changes have been made to:

- Ensure the applicant is aware and agrees to the information being supplied by the verifying individual.
- Provide the department with better tools for enforcement against people who submit falsified documents.

If you have old affidavit forms and applications in your possession, please dispose of your existing stock. Current forms are available from all Electrical Field Service Locations, Central Office, or can be downloaded and printed from the Electrical Web site from the Forms and Publications section.

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Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 2 No. 9** **September 1999**

Electrical code issues and answers.

● Oldest Electrician?

When the renewal for the general electrical journeyman certificate arrived at central office for Carson M. Akre it turned a few heads. Do we have a Y2K problem? You see, the information the computer generated showed that Mr. Akre, whose nickname is Carl, was born June 27, 1900. The licensing representative was a little taken aback to say the least. If this date is correct, the man is ninety-nine. Yes, count them, 99 years old! The information was confirmed. Dene Koons, the Electrical Field Supervisor for the Tri-Cities and Walla Walla service locations, went to visit Carl Akre.

Dene found Carl to be a very young spirited and patriotic 99-year-old who wants to keep his electrical certificate just in case his country would call on him. He is also an inventor and now an author. He is keeping some of his inventions a secret but says you can find out about them when you read his autobiography. The book is written and Carl is looking for a publisher.

In 1916, Carson M. (Carl) Akre went to work as an electrical trainee for Frederick and Nelson in Seattle. In 1917 he was drafted into the United States Army. However the armistice was signed before he was called into service. In that same year he moved to Spokane and began studying to be a photographer. He said he was living in Spokane when the downtown streets were first lighted. He told Dene the power, which was DC, came from a Washington Water Power dam that was located where the Monroe Street Bridge now crosses the Spokane River. He lived in Spokane until 1921.

In 1921, Carl enlisted in the United States Marine Corps and served as an orderly for Admiral Nimitz aboard the USS California. In 1922, he began taking ICS courses for electricians. In 1924, after being discharged from the service he went to work as an electrician in Los Angeles for the Shell Oil Company. He worked there until the depression hit. He took a cut in pay when he moved back to the State of Washington in 1930 and went to work as an electrician's helper at the U.S. Veterans Administration Hospital in Walla Walla. It is now the General Wainright Veterans Hospital. He went to night school and also worked as an engineer and draftsman at the facility. Carl retired from the hospital in 1965 and now brags that he has been retired just about as long as he worked. In 1973, Carl grandfathered his many years of experience and became a Washington State certified electrician.

By the way Carl still lives at home and drives his car, although he admits that he doesn't venture out past dark these days. He also bought his first computer in 1992 and has been on it almost every day since.

Congratulations Carl! We at the Department of Labor and Industries are proud to salute you as the state's oldest known certified electrician.

● Conduit Seals for On-site Sewage Disposal Systems

The department has received several questions recently regarding the type of sealing fittings approved by the department for on-site sewage systems. When the word "approved" appears in rules or statutes, the department must determine the acceptability of the products and installation methods used. WAC 296-46-50002(1)(e) requires an "approved" sealing fitting be installed to prevent the migration of corrosive gases or vapors from the pumping chamber for residential and other on-site systems with residential loading characteristics.

Most sealing installations have been made using "explosion-proof" type sealing fittings with sealing compound, even though vented residential systems are not classified locations and do not require explosion proof fittings. Other sealing methods may be allowed to prevent the migration of gases and vapors. "Ductseal" or other sealing methods, may be allowed, provided the method of sealing has no negative effect on the conduit or wiring and is installed in a manner that prevents the migration of gases and vapors. Communication between the installer and the inspector is necessary to ensure the installation method is acceptable.

● New Service For Contractors - Internet Access To Request Inspections

The department is offering an Internet Access service to Electrical Contractors who utilize Contractor Deposit Accounts. This service will be available September 15, 1999 and is the first step to provide Internet access to our customers. The first phase is called EIRS, which is a service that will give contractors the ability to request electrical inspections on-line every day up until 9:00PM. To sign up for this service, contractors must complete an application form and sign a user contract. The application and contract will be available on the Electrical Homepage www.wa.gov/lni/electrical, or by contacting Phyllis Cooper via e-mail, tayp235@lni.wa.gov, or calling (360) 902-5252 to request a package to be mailed. The second phase for Internet access services will be called IPEP, which will allow contractors to purchase electrical permits on-line. This service will not be available for several months. We would like to thank the contractors who voluntarily participated in the EIRS pilot project for their patience and time in developing this application. We are excited about this new service and are looking forward to expanding our ability to provide access to inspection related information online.

● Battery Powered Emergency Lighting Units

Individual unit equipment for emergency illumination (egress, exit lights, etc.) is covered in NEC 700-12(e). This article has the following requirements: (1) *"Unit equipment shall be permanently fixed in place"* (2) *"The branch circuit feeding the unit equipment shall be the same branch circuit as that serving the normal lighting in the area and connected ahead of any local switches"*. The branch circuit requirements are very important. If the normal lighting circuit were to fail, the emergency lighting must come on for the safety of persons in that area. There is one exception to this requirement. *"In a separate and uninterrupted area supplied by a minimum of three normal lighting circuits, a separate branch circuit for unit equipment shall be permitted if it originates from the same panelboard as that of the normal lighting circuits and is provided with a lock-on feature."*

● MC and AC Cable -- Anti-Short Bushings.

NEC 334-12 says that the fittings used to terminate **Type MC** cable to boxes or other equipment must be listed and identified for such use. There is no requirement in the NEC for anti-short bushings to be installed unless the manufacturer's instructions specifically require their installation. Some manufacturers supply anti-short bushings as a courtesy, but do not specifically require their installation.

NEC 333-9 requires that all terminations of **Type AC** cable protect the wires in the cable from abrasion and that an insulating bushing or its equivalent be installed. The insulating bushing must be visible for inspection after the installation is complete.

● Requirements for Portable Generator Systems.

WAC 296-46-702 requires optional standby systems supplied by portable generators to meet the requirements of NEC 702. NEC 702-6 requires that the transfer equipment for optional standby loads to be suitable for the intended use. This requirement is satisfied by either providing listed transfer equipment or a multi-position switch/transfer mechanism that has a reference label stating the device satisfies the requirements of NEC 702. NEC 702-8 now requires that a sign be provided at the service-entrance equipment indicating the type and location of on-site optional standby power sources.

The method of disconnection of the generator circuit is not addressed in NEC 702. Since a portable generator is temporary in nature, the requirements for disconnecting are found in NEC 305-4(e). A suitable disconnecting switch or plug connector is required to disconnect all ungrounded conductors of the temporary generator circuit. If a plug connector is used as the disconnecting means, NEC 410-56(g) requires the plug connector to be constructed so that prongs, pins, or blades are not energized until inserted into an energized receptacle. This requirement means that a receptacle mounted on a building for receiving power from a portable generator must be a male receptacle.

● What is the Minimum Separation for Nonmetallic Boxes in Common Fire Rated Walls?

Box separation in common fire rated walls is not specifically addressed by the National Electrical Code. The electrical installer and inspector must verify the installation listing requirements of all device and junction boxes installed in common fire rated walls. For nonmetallic outlet boxes the UL Electrical Construction Equipment (Green) Book, for most installations, requires a minimum horizontal separation between boxes of 24". Some manufacturer's instruction/listing documents may reduce the 24" separation requirement because of the type and amount of insulation to be installed or other installation factors. **Installers should also be aware that the Uniform Building Code, adopted by most building departments, has strict requirements on electrical box installations in common fire rated walls and ceilings.**

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Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 2 No. 8** **August 1999**

Electrical Code Issues And Answers.

● Carnival Electrical Inspection Fees

WAC 296-46-910**(i)** specifies the fees required to obtain electrical inspections for carnivals. This portion of the Inspection fee section is divided into four sections.

First field inspection of the year when part of a carnival: The fee for rides and generators is $16 each. The fee for remote distribution equipment, concessions, or gaming shows is $5 each. A minimum fee for first of the year inspections is $84.25.

Subsequent inspections when part of a carnival: The fee for the first ten (10) rides, concessions, generators, remote distribution equipment, or gaming shows is a minimum of $84.25. Each additional unit is $5 each.

First field inspection of the year when not part of a carnival: The fee for single concessions or rides is $67.

Subsequent inspections when not part of a carnival: The fee for single concessions or rides is $44.25.

If the inspection involves both types of inspection, first of the year and subsequent, the minimum fees for both must be assessed. First of the year field inspections and subsequent inspections are substantially different in nature and are considered separate inspections.

● Grounding for Two or More Buildings or Structures

NEC 250-32(b)(1) requires a separate equipment grounding conductor to be installed between buildings. The equipment grounding conductor must be run with the supply conductors and be connected to the structure disconnecting means and grounded to the grounding electrode system required by NEC 250-32(a).

NEC 250-32(b)(2) says that when an equipment grounding conductor is not installed, three specific conditions must be met. *"Where (1) an equipment grounding conductor is not run with the supply to the building or structure, and (2) there are no continuous metallic paths bonded to the grounding system in both buildings or structures involved, and (3) ground-fault protection of equipment has not been installed on the common ac service, the grounded circuit conductor run with the supply to the building or structure shall be connected to the building or structure disconnecting means and to the grounding electrode(s) and shall be used for grounding or bonding of equipment, structures, or frames required to be grounded or bonded."*

Code-making Panel Five concludes there is no *"...sound technical basis for knowingly permitting neutral current to return to the source on parallel paths..."* Bonded metallic paths that could create parallel paths with the supply conductors may include: water lines, gas lines, shielded coaxial cable, telephone wiring, or other power wiring.

● "Capable of Being Locked"?

The National Electrical Code uses the term "capable of being locked" in many places, but does not provide a concise definition of intent. "Capable of being locked" is used when guaranteed disconnection of equipment and/or circuits is required for the protection of personnel. General Safety and Health Standards, WAC 296-24-11003(3) (lock out and tag out), says *"...An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it."*

Circuit breaker accessories that do not have the capability of affixing a lock do not satisfy the requirements of "capable of being locked." The accessory device or other method satisfying the requirement of "capable of being locked" must be installed at the time the panel or disconnecting device is inspected.

● What Happens If I Lose My Approved Plan Review Drawings?

WAC 296-46-140 states that the approved drawings must be on the job site for use by the installer and electrical inspector. After approval, the submitted drawing set is stamped by electrical plan review and returned to the submitter. It is normally the only copy of the approved drawings. The Department does not keep a copy of approved drawings. If the approved drawings are lost, the inspection process may be slowed or in some cases stopped. If the

approved drawings cannot be found, they must be re-submitted to plan review and another complete review must take place. A new, complete plan review fee would be required for the second review. Recently, this has been a common problem. The Department encourages customers to carefully protect and track approved plans.

● On-Site Sewage Disposal Systems Installations with Manual Run Switches

Electricians have installed sewage disposal controllers incorporating manual "run" switches which may allow an operator to place the manual switch into the "run" position and pump the sewage tank dry. WAC 296-46-5002 requires "the submergence of the pumping motor shall be guaranteed by the design of the pump or by redundant off floats." The department may revise this rule but until such revisions are made, the requirements for guaranteed submergence of the sewage pumping motor must not be defeated by manual "run" or other circuiting methods.

● Disconnection Provisions for Maintenance & Service of Gasoline Dispensing Equipment

New language in 1999 NEC 514-6 addresses the disconnection of **all** external voltage sources for servicing and maintenance of dispensing equipment. Dispensing equipment includes all equipment that dispenses gasoline, volatile flammable liquids, or liquified flammable gases.

The installation of a multi-pole switching device could be allowed between the branch circuit panel and multiple dispensers provided **all circuit conductors** (grounded and ungrounded) to those dispensers are disconnected. The new provisions for maintenance and service of dispensing equipment do not specify that each dispensing device be separately provided with a disconnecting means. The 1998 NFPA Report on Proposals does not address the issue of separate disconnecting means.

An emergency disconnecting means is required in NEC 514-5. WAC 296-46-514 allows a multi-circuit electrically held contactor to be used as the gasoline pump disconnecting means. Department practice has allowed a multi-circuit disconnecting switch to also serve as the emergency disconnecting means. The emergency disconnecting means required in NEC 514-5 could serve as the service and maintenance disconnecting means providing all external voltage sources (grounded and ungrounded circuit conductors) are disconnected. The installer must remain aware that if separate disconnecting devices are provided for each dispenser, interconnecting control wiring may introduce the possibility of control circuit feedback.

● Wireway Conduit Entry

The 1999 NEC 362-6 now provides clarification of the requirements for multiple conduit and cable entries into wireways containing the same insulated conductors, size No. 4 or larger. New material in NEC 362-6 says that *"...where insulated conductors No. 4 or larger enter a wireway through a raceway or cable, the distance between those raceway and cable entries shall not be less that six times the trade diameter of the larger raceway or cable connector."* The distance should be measured between the closest points of the entries. This requirement closely approximates the requirements for pull boxes in NEC 370-28 for angle pulls. NEC 362-6, for wireways, establishes a minimum distance separation of entry points. NEC 370-28, for pull boxes, establishes minimum box dimensions and a minimum distance separation of entry points.

● NEC 700 Emergency Transfer, Pickup, and Shedding Requirements

The department has had problems recently with two requirements in NEC 700. A revised section, NEC 700-6, states that transfer equipment (switches) serving NEC 700 Emergency Loads (egress lighting, fire alarms, etc.) may not serve any other loads, including NEC 701 Legally Required Standby, or NEC 702 Optional Standby System.

Does this mean that separate transfer equipment (switch) is required to supply NEC 700 Emergency Loads? Yes. Transfer equipment supplying Emergency Loads may supply only those Emergency Loads.

Another article, NEC 700-5(b), allows the emergency generator or other alternate power source to pickup three types of loads, Emergency Systems (NEC 700), Legally Required Standby (NEC 701), or Optional Standby Systems (NEC 702). If the alternate power source supplies loads other than those for Emergency Systems, the system must provide automatic selective load pickup and load shedding "as needed" for all loads. The order of priority for load pickup and shedding is NEC 700, NEC 701, then NEC 702 loads. The NEC 700 Emergency Loads must be kept on line at the cost of all others.

The term "as needed" allows the use of non-automatic load pickup and shedding in certain situations. Clarification of the requirements should be made on a case-by-case basis with the electrical inspector or plan reviewer. The requirement for automatic load pickup or shedding is dependent on equipment sizing and load requirements.

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Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 2 No. 7** **July 1999**

Electrical code issues and answers.

● Swimming Pool, Spa, and Hot Tub Equipment Disconnects

The 1999 NEC 680-12 now requires that *"A disconnecting means **shall be provided** and be accessible, located within sight from all pools, spas, and hot tub equipment, and shall be located at least 5 ft (1.52 m) from the inside walls of the pool, spa, or hot tub."*

NEC 680-12 is not specific as to what is to be disconnected. A review of the NFPA Report on Proposals (ROP) indicates that the intent was to disconnect **all equipment** associated with pools, spas, and hot tubs. Additional review of the 1996 ROP, a conversation with the Chairman of Code Panel number 20, and review of the comments in the 1999 NEC Handbook makes it clear that the disconnecting means is intended to be installed within sight of the equipment. This would include all pumping, heating, lighting, and other associated equipment such as pool cover motors. Simultaneous disconnection of all equipment is not required. Multiple disconnects can be used.

A new code section NEC 680-38 for spas and hot tubs has been added and requires that *" A clearly labeled emergency shutoff or control switch for the purpose of stopping the motor(s) that provide power to the recirculation system and jet system shall be installed readily accessible to the users and at least 5 ft (1.52m) away, adjacent to, and within sight of the spa or hot tub. This requirement shall not apply to single-family dwellings."*

NEC 680-38 requires an emergency shutoff for recirculating and jet system **motors(s)** that is readily accessible to the users. In some cases, this could be accomplished with the disconnecting means required by NEC 680-12, provided that the disconnecting means is within sight of both the equipment **and** the spa or hot tub. The emergency shutoff is intended to provide an additional level of safety by providing a means to disconnect power should anyone be trapped in a suction opening. The requirement for the emergency switch could be accomplished by installing a clearly labeled shunt trip or "panic" button in the control circuit that would disconnect power to recirculation and jet system motors.

The emergency switch for spas and hot tubs required by NEC 680-38 must be clearly labeled. The department has determined that to be clearly labeled this switch must be substantially red in color and identified with a sign/label as the emergency disconnecting means. This determination is consistent with other identification requirements found in the WAC for emergency disconnection means.

● Proper Identification and Use of Tamper-resistant Receptacles

Questions have been raised regarding the proper use of tamper resistant receptacles. WAC 296-46-21052 says, *"Tamper resistant receptacles are required in licensed day care facilities and pediatric or psychiatric patient care areas for 15 or 20 ampere, 125 volt receptacles. Tamper resistant receptacles shall, by construction, limit improper access to energized contacts."* Information about tamper resistant receptacles can be found in UL's General Information for Electrical Equipment (white book, page 73).

The letters "TR" must be affixed by the manufacturer to the receptacle and visible after installation when the device cover is removed. Tamper resistant receptacles may be of the general, hospital, or isolated ground type. Standard GFCI receptacles are not considered to be tamper proof unless they bear the "TR" designation.

● Inspection Requirements for Elevator Room Branch Circuits

The 1999 NEC 620-22 has changed to require the branch circuit overcurrent devices to be located in the elevator machine room/machinery space for the car lights, receptacle(s), auxiliary lighting power source, air-conditioning, and ventilation for each elevator car. The disconnecting means for these overcurrent devices must be capable of being locked in the open position and meet all the requirements of NEC 620-53 & 54. The car light source, HVAC source, machine room lighting/receptacle(s), and hoistway pit lighting/receptacle(s) must be supplied by separate dedicated branch circuits.

A revision to Electrical Inspection Policy 98-12 became effective January 11, 1999 regarding the scope of work for Labor and Industries Electrical/Elevator Inspectors. **Electrical inspectors** will inspect the installation of the disconnect, shunt trip, and feeder up to the conveyance controller and other miscellaneous electrical wiring within

the machine room, including but not limited to lights, receptacles, sump pumps, smoke, and heat detectors installed by the electrical contractor. In elevator installations where a shunt trip is required, the disconnect will not be approved until after the shunt trip is installed. **Elevator Inspectors** will inspect for proper operation of the disconnect, shunt trip device and all other work related to conveyance installation/alteration permits, including, but not limited to, all electrical, mechanical, and hydraulic systems in elevator machine rooms, hoistway, pit, cab, lobby, and top of car. The electrical, elevator, and safety coordinators must work together to ensure a safe installation and inspection.

● Aluminum Conduit – In Concrete, Direct Buried, or Corrosive Environment

Can rigid aluminum conduit be installed underground to a septic wet well? Review of the UL White Book "Guide Card" Rigid Nonferrous Metal Conduit (DYWV), indicates Aluminum conduit used in concrete or in contact with soil requires supplementary corrosion protection. The White Book says, *"Aluminum conduit used in concrete or in contact with soil requires supplementary corrosion protection. Supplementary non-metallic coatings as part of the conduit have not been investigated for resistance to corrosion."*

NEC 300-6(b) also requires supplementary corrosion protection for all non-ferrous metal raceways installed in concrete or in direct contact with the earth. Because supplementary corrosion protection for aluminum conduit is not evaluated under any standard, aluminum conduit installed in concrete, direct contact with the earth or other corrosive environments is not allowed.

● Wet Location Splices in Well Heads, Septic Tanks, and Open Bottom Handholes

Well heads and septic tanks are wet locations and require splices that are suitable for wet locations. Splices made in open bottom handholes/boxes are required to be suitable for direct burial. If the handhole/box is manufactured specifically for electrical use, splices approved for wet locations will be permitted under the following conditions in WAC 296-46-370:

(1) *The box shall be rated for not less than H-10 loading (8000 pounds over a 10" x 10" area) and be provided with a bolted, hinged, or slide-on lid embossed with the identification "ELECTRIC" or "ELECTRICAL." Metal covers shall be grounded per NEC Article 250.*
(2) *All conductors must be installed in approved electrical raceways which enter vertically from the open bottom of the enclosure. These raceways shall be fitted with a bushing, terminal fitting, or seal incorporating the physical protection characteristics of a bushing, and project not less than 2 inches (5 cm) above the bottom surface material. The bottom surface material shall be pea gravel, sand, or concrete.*

It is important to remember that wire and splices in an open bottom handhole/box are considered to be direct burial requiring direct burial cable and splices **unless** it meets the requirements of (1) and (2) above that would allow wet location wire and splices. It should be noted that standard wire nuts are not approved for wet locations.

● Clarification of June 1999 Conduit to Outdoor Hot Tubs and Spas

The June 1999 Currents article relating to wiring methods for outdoor hot tubs and spas requires further explanation to clear up some confusion it may have caused.

NEC 680-40 requires that outdoor spas and hot tubs comply with the provisions of Part A and B of Article 680. Part A of NEC 680 applies to all pools, outdoor spas, and outdoor hot tubs. Part B, however, applies only to pools, outdoor spas, and outdoor hot tubs that are **permanently installed.**

NEC 680-4 defines permanently installed swimming, wading, or therapeutic pool as: *Those that are constructed in the ground or partially in the ground, and all others capable of holding water in a depth greater than 42 in. (1.07m).* This definition would not include most packaged spas or hot tubs that are set on a slab or patio since they are not in the ground and are typically shallower than 42 inches.

Further clarification is needed as to the wiring methods related to feeders that supply a panelboard installed at a separate building for pools, spas, and hot tubs. The main text of NEC 680-25 (d) requires that the feeder conductors **and** an insulated equipment grounding conductor shall be installed in rigid metal conduit, intermediate metal conduit, liquidtight flexible nonmetallic conduit, or rigid non metallic conduit and allows the use of EMT where installed on or in the building. NEC 680-25 (d) (2) allows: *"A panelboard at a separate building shall be permitted to supply swimming pool equipment if the feeder meets the* ***requirements for grounding*** *in Section 250-32."* Subsection (d)(2) may allow the feeder to be regrounded at the separate building thus eliminating the need for the insulated equipment grounding conductor but does not exclude the requirement that the feeder conductors are installed in conduit. When the neutral conductor of the feeder is used to ground the panelboard at the separate building it is as equally important to protect the neutral as it is to protect a separate equipment grounding conductor.

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 2 No. 6** **June 1999**

Electrical code issues and answers.

● Equipotential Planes in Agriculture Buildings

The 1999 NEC 547-9 requires that an equipotential plane be created in concrete floors in animal confinement areas of buildings that have electrical wiring. An equipotential plane made of wire mesh or other conductive elements (e.g. reinforcing bar) must be installed in the concrete floor and bonded to all adjacent metal structures, surfaces and fixed non-electrical metal equipment. The equipotential plane must be bonded to the building electrical grounding system to prevent a difference in voltage from developing within the equipotential plane. Minimum #8 copper wire must be used for all equipotential bonding.

Equipotential planes are necessary in "animal confinement areas" where the livestock are exposed to more than one electrical conductive element, including things like watering units, feeders, metal partitions, stalls, or milking equipment. In such areas, the potential for "stray" currents would exist if all the conductive surfaces were not bonded together. Additionally, a "voltage gradient or voltage ramp" may be necessary at entrances and exits to the equipotential plane to reduce the potential for an animal to receive a shock as it steps onto or off the plane. The voltage differential cannot be totally eliminated, but it can be reduced to acceptable levels.

NEC 547-9 FPN No. 2 references the ASAE design criteria noted below as a possible standard of design for equipotential planes. **The designer of the equipotential plane is responsible for designing a plane that will prevent a difference in voltage from developing within the plane.** The NEC does not have specific design requirements for the equipotential plane.

● Additional Information for Scope of Work -- HVAC/Refrigeration

Is a Limited Energy System (06) contractor/electrician permitted to do work included in the scope of the HVAC/R (06A) specialty? Yes. The intent is to allow the (06) to install the same control wiring, HVAC/R equipment, and service and replace line and low voltage components as allowed in the (06A) category. This is consistent with current industry practice. The scope of the (06) specialty encompasses the work in the (06A).

What work is an HVAC/R technician permitted to do? An HVAC/Refrigeration technician may install HVAC/R electrical equipment and the Class 2 HVAC/Refrigeration control cables and devices that control furnaces, heat pumps, HVAC/R equipment in residential occupancies and other buildings that are three stories or less in height. An HVAC/R technician is also permitted to install, service, and replace line and low voltage components and wiring within the equipment. "Within the equipment" is defined as inside the equipment or within close proximity and integral with the operation of the HVAC/Refrigeration equipment. A commercial boiler is an example of equipment that might not be "inside" a single piece of equipment. Control devices, valves, motors, and etc. might be in the boiler room, but not directly attached to the boiler itself. Another example could be an electronic air filter located immediately adjacent to a furnace when the power supply for the air filter is obtained from appropriate power terminals on a furnace.

What work can an HVAC/R technician not perform? An HVAC/Refrigeration technician cannot install branch circuit, feeder, or service conductors that supply a piece of HVAC/R equipment. The scope of work for the HVAC/R technician begins at the power termination point within the equipment. The technician cannot install any wiring in classified (hazardous) locations.

What work is required to be permitted and inspected? WAC 296-46-495 requires an electrical work permit for the "installation, alteration, or other maintenance of electrical systems except for replacement of circuit breakers or fuses, for replacement of lamps, snap switches, receptacle outlets or heating elements, replacement of a lighting fixture ballast with an exact same ballast, replacement of contactors, relays, timers, starters, or similar control components or for plug-in appliances or travel trailers." For the purposes of HVAC/Refrigeration equipment, "similar control components", will be interpreted to include manufacturers' authorized replacement components, motors, and compressors. Most routine service work to HVAC/R equipment will not require an electrical permit. That unpermitted service work would, however, require the technician to possess a valid HVAC/R certificate.

● Temporary Service – GFCI Requirements

The 1999 NEC 305-6 has made significant changes in the GFCI requirements for temporary services. The NEC 305-6(a) now requires *"all 125-volt, single-phase, 15-, 20-, and 30-ampere receptacle outlets"* to have GFCI protection. NEC 305-6(b) requires that all other receptacles have GFCI protection or an assured equipment grounding conductor program must be in place for all contractors and sub-contractors working on the site. If an assured equipment conductor program is to be used, the program must be in place and available to the inspector when the temporary is inspected and until the temporary service is disconnected.

● Wiring to Temporary Portable Construction Office/Storage Structures

Commercial coaches are identified with the Labor and Industries black label insignia. Units equipped with a 120-volt electrical system must have a label that reads "THIS CONNECTION IS FOR 110-125 VOLT AC SERVICE. DO NOT CONNECT TO HIGHER VOLTAGE." Units equipped with 120/240-volt systems are labeled "THIS CONNECTION IS FOR 120/240 VOLT AC _____ AMPERE SERVICE" and units equipped with 480/277-volt systems must be labeled "THIS CONNECTION IS FOR 480/277 VOLT AC _____ AMPERE SERVICE." (The correct equipment rating shall be stamped in the blank spaces.) These labels must be installed on an outside wall, adjacent to the point of entrance of the supply assembly or permanently installed feeders.

Black label commercial coaches set up as temporary construction offices and storage structures may be fed with temporary wiring methods in compliance with NEC Article 305. The ampere rating on the label is intended to identify the maximum rating of the electrical equipment and conductors installed within the commercial coach. Feeders to these units need to be of adequate capacity and rating to carry the loads as calculated in NEC Article 220 and must not exceed the rating on the label.

● RV Septic Tank Requirements

A Recreational Vehicle (RV) must be considered as a residential unit when interpreting WAC 296-46-50002. An RV is defined in 1999 NEC 551-2 as a unit that is primarily designed as temporary living quarters (a temporary residence). If there is a Recreational Vehicle Park (two or more RVs), the on-site or STEP system may not have residential loading characteristics. The installation will probably have open floor drains, shower, laundry, or other facilities connected to the sewage system. The residential classification permitted in WAC 296-46-50002 would no longer apply. When multiple RVs are connected to on-site and STEP systems, the entire system must be evaluated to determine the correct classification.

● Conduit to Outdoor Hot Tubs and Spas

Previous editions on the National Electrical Code did not specifically address wiring methods to the disconnect for outdoor hot tubs and spas. The 1999 edition of the codes is specific as to the grounding requirements and wiring methods to the disconnecting means.

NEC 680-40 requires that *"A spa or hot tub installed **outdoors** shall comply with the provisions of Parts A and B of this article except as permitted in (a) and (b)."* Article 680-25 (d), found in Part B of NEC 680 now is specific about grounding a disconnect. *" A panelboard and, where installed, a disconnecting means, that are not part of the service equipment or source of a separately derived system, shall have and equipment grounding conductor installed between its grounding terminal and the grounding terminal of the applicable service equipment or source of a separately derived system."*

The 1999 code makes it clear that the equipment grounding conductor must be insulated and must be installed with the feeder conductors in rigid metal conduit, intermediate metal conduit, liquidtight flexible nonmetallic conduit, or rigid non metallic conduit. It is permissible to use EMT where it is installed on or within the building and electrical non-metallic tubing where installed within a building. NEC 680-25(d) no longer allows multi-conductor cable to supply a new panelboard or new disconnect. Existing multi-conductor cable is allowed to feed existing remote panelboards and disconnects.

● Sign Transformer Secondary Circuit Ground-fault Protection per NEC 600-23

NEC 600-23(b) states that "Transformers and electronic power supplies shall have secondary ground-fault protection." The code requirement preceded the neon transformer and power supply manufacturing industry's ability to supply a product that complies. In order to cooperate with the electrical distributors and the sign manufacturing and installation industry, the department will not begin active enforcement of NEC 600-23(b) until September 1, 1999. This should give the industry adequate time to distribute the new equipment and clear existing supplies of transformers and power supplies from the distribution pipeline.

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 2 No. 5** **May 1999**

Electrical code issues and answers.

● Flexible Cord Drop Pendants

We have received several questions regarding the acceptability of supporting flexible cord pendant drops from the building structure when supplied from junction boxes, wireways, etc. Changed language in the National Electrical Code 400-8(4) Exception appears to allow flexible cords to be attached to building surfaces only when the flexible cord drop is fed from a busway. The 1996 NEC 400-8 Exception allowed a flexible cord pendant drop to be attached at one point to the building structure for a tension relief device (see Electrical Policy 98-05).

Review of the Report on Comments reveals that no substantiation was submitted to require a busway only restriction. 1999 NEC 400-7(a)(1) and NEC 362-11 & 26 specifically allow flexible cord pendant drops from junction boxes, wireways, etc. We will continue to allow flexible cord pendant drops to be supported at one point (within 2' of the junction box) from the building structure when supplied from junction boxes, wireways, etc.

● Special documentation requirements for multiple feeders and branch circuits

A new Part B has been added to 1999 NEC 225 for More than One Building or Other Structure. 1999 NEC 225-30(b)(e) and NEC 225-32, Exception 1 are substantial changes from previous requirements.

1999 NEC 225-30(b)(e) allows *"additional feeders or branch circuits to supply installations under single management where documented safe switching where documented safe switching procedures are established and maintained for disconnection"*. NEC 225-32, Exception No. 1 allows the disconnecting means to be *"located elsewhere on the premises"* for *"installations under single management where documented safe switching procedures are established and maintained for disconnection"*. The words *"large capacity multibuilding industrial installations"* have been removed. Single management is when the electrical installation is under the control of one entity, usually the facility owner. Documented safe switching procedures must include a method of disconnection that ensures the elimination of unsafe conditions for personnel and property. A list of authorized and qualified persons allowed to implement the "safe switching" must be contained in the documentation. "Qualified" refers to any person(s) who are trained in responsible and safe implementation of the documented safe switching method. The documentation must be made available at the time of inspection.

● Coordination of Inspections – especially roadway crossings

All permitted electrical installations must be inspected and the electrical inspector must be afforded the opportunity to inspect each installation prior to it being covered.

Coordination of inspections such as conduit and traffic loops in roadways present special challenges for both the installer and the electrical inspector. Both must be willing to work closely together. Only with mutual cooperation can inspections be made in a timely manner while preserving public safety. We are very concerned with your being able to cover these installations as quickly as possible in order to not impede traffic flows and prevent possible injury to the public. We urge all parties (installers, electrical inspectors, and electrical field supervisors) to closely coordinate all inspection issues thus ensuring an efficient inspection process.

● Proper use of annual permits

There is some confusion about what work can be performed under an annual permit for plants employing regular maintenance electricians. The annual permit covers routine maintenance of existing systems and equipment, altered circuits, altered feeders, new circuits or feeders from existing gear, circuit extensions, lighting retrofits, replacement of equipment, panelboards, and service gear on existing feeders or service conductors. Adding new feeders and circuits for a new addition to an existing building will also be allowed. The cost of the annual permit must cover the number of inspections requested. If it does not, then a trip fee will be assessed for progress inspections at $32.50 per half-hour as we do on other projects.

Installation of a new service with accompanying new feeders and branch circuits, to a new building or to an existing building will require a separate Electrical Work Permit under WAC 294-46-910(2).

● Bonding metal gas piping

1999 NEC 250-104(b) requires that *"each aboveground portion of a gas piping system upstream from the equipment shutoff valve shall be electrically continuous and bonded to the grounding electrode system."*

Before the 1999 code was adopted the requirement for bonding metal gas piping was in the 1996 NEC Article 250-80(b). That article required bonding all other interior metal piping with a bonding jumper sized in accordance with Table 250-95 using the rating of the largest circuit that could energize the piping. The 1999 code-making panel accepted a proposal to specifically address metal gas piping. The method of sizing the bonding jumper to metal gas piping is absent from the new code article. Review of the Report on Comments makes it clear that the intent of the Code Panel was to size the bonding jumper for metal gas piping in the same manner as for other metal piping as found in NEC 250-104(c). The bonding jumper to metal gas piping must be sized in accordance with Table 250-122 of the National Electrical Code using the rating of the largest circuit that may energize the piping.

● Carnival 15 and 20 amp 125 volt receptacles

1999 NEC Article 525-18 of the National Electrical Code requires that "*All 125 volt, single-phase receptacle outlets that are in use by personnel shall have listed ground-fault circuit-interrupter protection for personnel. The ground-fault circuit interrupter shall be permitted to be an integral part of the attachment plug or located in the power-supply cord, within 12-in. (305 mm) of the attachment plug. For the purposes of this section, listed cord sets incorporating ground-fault circuit-interrupter protection for personnel shall be permitted. Egress lighting shall not be connected to the load side terminals of a ground-fault circuit interrupter receptacle."*

The department will grant a one-year grace period to comply with 1999 NEC 525-18 provided a written Assured Equipment Grounding Program procedure is continuously enforced at each site where a carnival or amusement ride is set up. This procedure must be enforced to ensure the safety of equipment grounding conductors for all cord sets and receptacles, as described in 1999 NEC 305-6(b)(2). The tests required in NEC 305-6(b) and the Assured Equipment Grounding Program must be recorded and made available to the electrical inspector.

● Hospital grade receptacles in dental patient care areas

In 1999 NEC Article 517 patient care areas are defined as *"Any portion of a health care facility wherein patients are intended to be examined or treated.* General care areas *"are patient bedrooms, examining rooms, treatment rooms, clinics, and similar areas in which it is intended that the patient shall come in contact with ordinary appliances such as a nurse call system, electrical beds, examining lamps, telephone, and entertainment devices."* Areas of a dental clinic in which patient care is administered are normally classified as general care areas, but may be considered critical care areas by the health care administrator (such as in an oral surgery area).

When patient bed locations are specifically addressed in 1999 NEC 517-18 and NEC 517-19, <u>the department considers a dental chair to be a patient bed location in both general and critical care areas of dental clinics</u>. Investigation of the standard for listed dental chairs (ANSI/UL 544-Medical and Dental Equipment) shows that cord connected dental chairs are appliances required to have a locking type attachment plug designated "hospital only" or a conventional 2-blade with grounding pin attachment plug designated "hospital grade." It is logical to require a "hospital grade" attachment plug to be connected to a "hospital grade" receptacle.

1999 NEC 517-18 & 517-19 describe the specific requirements for receptacles, circuits, and grounding in general and critical care area patient bed locations and specifies all receptacles installed must be "hospital grade" and so identified. To eliminate any confusion about patient bed location "boundaries" in open areas or treatment rooms, the required receptacles must be installed within the patient vicinity defined in 1999 NEC 517-3. Patient vicinity is an area in which patients are normally cared for, and it is *"the space with surfaces likely to be contacted by the patient or an attendant who can touch the patient. Typically in a patient room, this encloses a space within the room not less than 6 feet (1.83 m) beyond the perimeter of the bed* (dental chair, treatment booth and the like) *in its nominal location, and extending vertically not less than 7½ feet (2.29 m) above the floor."* The words "*not less than"* must be noted. <u>The patient vicinity could be much larger than the 6-foot dimension mentioned</u>.

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 2 No. 4** **April 1999**

Electrical code issues and answers.

● THE 1999 NATIONAL ELECTRICAL CODE IS NOW IN EFFECT!

The 1999 NEC became effective in the State of Washington March 15, 1999. Our inspectors will allow a transition period until June 30, 1999, where **either** the 1996 **or** the 1999 NEC **(not a mixture)** can be applied to an electrical installation. All projects for which an electrical work permit is purchased after June 30, 1999 will be inspected under the 1999 NEC. All projects submitted for electrical plan review after June 30, 1999 will be reviewed under the 1999 NEC.

All NEC Articles referenced in this and future *ELECTRICAL CURRENTS* will be for the 1999 NEC unless otherwise noted.

● Service rated transfer equipment for optional standby systems

Many existing services are being retrofitted with back-up generators and transfer equipment for optional standby power supply capability. If new transfer equipment is installed ahead of an existing service disconnect, installers must be aware that transfer equipment then becomes the service disconnecting means must meet certain requirements. The transfer equipment must be listed and labeled by an approved testing laboratory and be identified as suitable for the intended use, and be marked "SUITABLE FOR USE AS SERVICE EQUIPMENT."

Compliance with this listing ensures that a manual method of disconnecting both the normal and alternate sources of power is provided. The transfer equipment may contain the service overcurrent protection. If the service overcurrent protection is not an integral part of the transfer switch, then the service overcurrent protection must be located immediately adjacent to the transfer equipment per NEC 230-91. "Immediately adjacent" means that no intervening barriers separate the service disconnect from the service overcurrent protection and that they be in close proximity. An overcurrent device on the opposite side of a wall from the transfer equipment is not acceptable for compliance with NEC 230-91.

● Documentation of hazardous location boundaries required before inspection

New section NEC 500-3(b) is a significant change to the requirements for setting the boundaries of hazardous (classified) locations listed in Articles 501, 502, 503, and 505. NEC 500-3(b) requires that *"All areas designated as hazardous (classified) locations shall be properly documented. This documentation shall be available to those authorized to design, install, inspect, maintain, or operate electrical equipment at the location."* The facility owner shall provide documentation or plans showing all hazardous (classified) area boundaries. The documentation shall be made available at the site for the electrical inspection. This documentation does not preclude the authority having jurisdiction (AHJ) from imposing more stringent requirements on the installation.

NEC 510-2 states that *"…the provisions of Articles 500 through 504, shall apply to the electric wiring and equipment in occupancies within the scope of Articles 511 through 517, except as such rules are modified in Articles 511 through 517."* The requirements of Articles 511 through 517 (e.g. the classified area around gasoline dispensers described in NEC 514) are minimum requirements that must be met or exceeded in the documentation of hazardous (classified) locations described in NEC 500-3(b).

● Supplemental and made grounding electrode systems - two ground rods required?

The NEC has clarified the type of installation required for supplemental electrodes. The NEC 250-50(a)(2) states that *"A metal underground water pipe shall be supplemented by an additional electrode. Where the supplemental electrode is a made electrode…it shall comply with Section 250-56."* The new reference to Section 250-56 requires that a supplemental made electrode (typically a ground rod) *"…that does not have a resistance to ground of 25 ohms or less shall be augmented by one additional electrode…"* For most installations, this means that two ground rods will be installed supplementary to a water pipe electrode or at an additional building where a made electrode needs to be established. The 1996 NEC 250-81(a) implied this type of installation, but did not specifically reference 1996 NEC 250-84 regarding resistance to ground requirements necessary for the made electrode to be considered an effective electrode.

● Recognized Components and Listed Components

The Underwriters Laboratories General Information for Electrical Equipment (white book) directory defines Recognized Components (identified by the ℞ mark) as *"…products that are incomplete in construction features or limited in performance capabilities. The Recognized Component Mark does not provide evidence of listing or labeling which may be required by the National Electrical Code or other installation codes or standards."* The State of Washington does not approve Recognized Components as stand alone products.

Listed Components are those products that are tested by an approved testing laboratory to be complete in function and performance (i.e. have the ability to stand-alone). A Listed Product may contain Recognized Components and/or Listed Components. A Listed product will bear an approved Listing Mark from an approved testing laboratory (e.g. An industrial Control Panel bearing its own separate Listing Mark while containing both Recognized and Listed Components). A Listed product may also be a stand alone Listed Component/Product (e.g. A standard motor starter). All electrical products installed in the State of Washington must bear an approved Listing Mark, field evaluation label, or inspection label.

● Small project plan review

WAC 296-46-140(6) has a provision for allowing small projects to have the electrical plan review done at the local inspection office. The rule states *"When a service or feeder is affected five percent or less by the addition or alteration of five or less branch circuits, plan review may be requested from the local inspection office. Permission for such small project plan review shall be granted at the discretion of the electrical inspection field supervisor, the plans examiner supervisor, or the chief electrical inspector."* The keys to this kind of review are the "five-percent or less" and "five or less branch circuits" provisions. Just because a project falls within these parameters does not automatically mean that this type of review will be allowed. The local electrical inspection field supervisor may require formal plan review through central office if the loads are close to equipment capacity and rating or if the project is complex. Plans reviewed at the local service location still require complete documentation and must meet all of the requirements outlined in the **Electrical Plan Review Submittal Guide**, available on our web site.

● NEC 725-54 - line and low voltage conductors in the same enclosure

The growing popularity of "smart" limited-energy lighting and appliance control systems (such as the PHAST® system by AMX or the HomeWorks® system by Lutron) has created the need to introduce line voltage conductors into enclosures with Class 2 or 3 circuit conductors. In general, NEC 725-54 states that *"Cables and conductors of Class 2 and Class 3 circuits shall not be placed in any cable, cable tray, compartment, enclosure, manhole, outlet box, device box, raceway, or similar fitting with conductors of electric light, power, Class 1, nonpower-limited fire alarm circuits, and medium power network-powered broadband communications cables."*

There have been problems reported in the field when conventional wiring is completed in a building and a limited-energy control system installation is added to the conventional wiring system before the walls are covered. Installers attempt to add Class 2 control conductors to boxes already filled with line voltage home runs, splices, and pigtails. Some limited-energy control devices produce heat and have additional wattage limitations when double- or triple-ganged. These devices are usually much larger than conventional switches and receptacles. Some manufacturers recommend large capacity boxes and clearances in excess of the NEC 2-inch minimum separation required for limited-energy conductors running parallel to electric light, power, Class 1, nonpower-limited fire alarm circuits, and medium power network-powered broadband communications cables. The installation of limited-energy control systems requires careful planning of the electrical system before the power wiring is installed.

Exception No. 1 to this article states that electric light, power, Class 1, nonpower-limited fire alarm circuits, and medium power network-powered broadband communications cables may be in the same enclosure provided they are installed with a barrier to separate them from the Class 2 and 3 conductors.

Exception No. 2 allows electric light, power, Class 1, nonpower-limited fire alarm circuits, and medium power network-powered broadband communications cables to be in the same enclosure with Class 2 or 3 conductors provided they *"are introduced solely to connect to the equipment connected to the Class 2 or 3 circuits"*. In addition, a minimum 0.25 in. (6.35 mm) separation is required between those conductors and the Class 2 or 3 conductors.

The general separation requirement of NEC 725-54 exists to minimize the possible introduction of higher voltage potentials into Class 2 or 3 cables. Electric light, power, Class 1, nonpower-limited fire alarm circuits, and medium power network-powered broadband communications cables are permitted in enclosures with Class 2 or 3 conductors only if they perform a function directly related to the device being supplied. **Unrelated conductors or cables must be routed through other junction boxes.**

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 2 No. 3** **March 1999**

Electrical code issues and answers.

● Contractor, electrician, and trainee compliance

To maintain a level playing field in the electrical construction industry, our electrical inspectors work hard at ensuring a licensed electrical contractor is performing the electrical work on the construction site in compliance with state law. When a licensing compliance check is performed, several questions are asked. Is the electrical equipment installed by a licensed electrical contractor within the scope of their license? Are the electricians and trainees on site properly certified and/or supervised?

There is another aspect of compliance that is not as immediately obvious. If the licensed electrical contractor is not working directly for the property owner, then the electrical contractor must be working for an appropriately registered (RCW 18.27) Washington construction contractor.

The electrical program has become aware of a compliance problem with out-of-state contractors unlawfully installing or subcontracting electrical work in Washington. Our electrical installation laws require that any contractor performing electrical work within the state must be a Washington licensed electrical contractor. For any construction contractor to subcontract the installation of the electrical work, the construction contractor would need to be a registered (RCW 18.27) general or specialty contractor in Washington.

Our electrical inspectors ensure the proper electrical licensing and certification on a job site and will make a referral to the compliance inspectors for unregistered (RCW 18.27) construction contractors.

● Are you still working within the scope of your electrical contractor specialty license?

As your business grows it may be necessary to move up to a general electrical contractor license or add another specialty to your specialty license. A "combination" specialty electrical contractor license requires a designated administrator in each specialty. However, only one contractor license fee and bond is required for any number of combined electrical specialties. RCW 19.28.120(1)(h) states that *"A specialty electrical contractor license shall grant the holder a limited right to engage in, conduct, or carry on the business of installing or maintaining wires or equipment to carry electrical current, and installing or maintaining equipment; or installing or maintaining material to fasten or insulate such wires or equipment to be operated by electric current in the state of Washington as expressly allowed by the license."*

This also means that a specialty electrical contractor cannot accept work outside of their specialty and then subcontract the work to an appropriately licensed electrical contractor. A specialty electrical contractor may perform work and accept subcontract work only within their specialty, unless they are also registered (RCW 18.27) as a construction contractor.

● Amusement ride season inspection reminders

Amusement ride companies are required to have each amusement ride or structure inspected for mechanical safety at least once annually by an insurer or a person with whom the insurer has contracted. Each ride or structure must also have an annual electrical inspection performed by the Department of Labor and Industries. Additionally, the electrical inspector shall monitor at each location where an amusement ride or structure is set up for operation, that the operating permit (safety) decal and a carnival electrical inspection decal have been obtained and that the ride description, model number and serial number are properly identified.

Prior to each electrical inspection the inspector will contact Brandi O'Shurak, (360) 902-6216 and obtain a list of the current rides registered with the department. If there are any changes or additions to this list of rides they should be noted. The inspector will, after completing each electrical inspection fax a copy of the list along with any correction reports to Ms. O'Shurak at FAX (360) 902-5296.

Upon completion of the first electrical inspection of the season for each ride or structure the electrical inspector will place a carnival (annual) electrical inspection decal at the ride or structure disconnecting means. An annual electrical inspection decal will also be placed at each distribution panel, concession panel, spider or splitter box, and at each generator to indicate that the initial annual inspection was made for that calendar year.

For the rest of the season, the electrical inspector will inspect the electrical power generation and distribution system for compliance with the National Electrical Code each time the ride or structure is set up for operation. A standard approval sticker will be posted at each generator or other power source upon completion of each site set-up.

A certificate of insurance indicating **$1,000,000 worth of liability insurance listing the Department of Labor and Industries** as the certificate holder is required to get an operating permit (safety) decal for any amusement ride.

● Paralleling conductors with ampacities allowed in Note 3 to table NEC 310-16 (Table 310-15(b)(6) in the 1999 NEC)

The NEC will allow conductors for total dwelling units loads to be utilized at ampacities greater than the values shown in Table 310-16 when all of the following conditions are met:

1. The conductors supply a 120/240-volt, 3-wire, single-phase dwelling service entrance, service lateral, or main power feeder.
2. The conductors are type RH, RHH, RHW, THHW, THW, THWN, THHN, XHHW, and USE (The 1999 NEC adds RHW-2, THW-2, THWN-2, XHHW-2, SE, and USE-2 to the list) installed in raceway or cable.
3. The grounded conductor is permitted to be smaller, than the ungrounded conductors, provided the requirements of sections 215-2, 220-22, and 230-42 are met.

Can conductors be used in parallel at these greater ampacities? Can the greater ampacities be applied to two-family and multifamily dwelling service conductors? The code does not clearly address these questions. Department inspectors and headquarters personnel have given various interpretations and decisions over the years. Even industry "experts" have differing opinions.

Consider the following example (based on the 1999 NEC article identification numbers):
Table 310-15(b)(6) will allow 2/0 THW copper conductors to supply a dwelling unit total calculated load of 200 amps and allow 400 kcmil THW copper conductors for a calculated load of 400 amps. Table 310-16 ampacities for 2/0 THW copper and 400 kcmil THW copper are 175 amps and 335 amps respectively. Clearly, two parallel runs of 2/0 THW copper have an ampacity of 350 amps which exceeds the rating of the single run of 400 kcmil THW copper permitted to supply a calculated 400 amp dwelling unit load. Similar situations exist for the other wire combinations within the table.

Department electrical plan review experience with 12-month metered demand data for structures wired as multifamily dwelling units shows a comfortable margin of safety between calculated loads and actual metered peak demands on the electrical system. The inclusion of 1996 NEC Note 3 to Table 310-16 and 1999 NEC Table 310-15(b)(6) in the Code, as exceptions to the ampacity limitations of Table 310-16, is based on the large diversity of electrical loading found in dwelling unit occupancies.

Regardless of previous interpretations or decisions made by the department, the increased ampacity of Table 310-15(b)(6) will be allowed for one-, two-, and multifamily dwelling units that meet all of the requirements of 1999 NEC article 310-15(b)(6). Conductors utilized at the ampacity in Table 310-15(b)(6) will be permitted to be used in parallel at that ampacity in not more than two paralleled runs in separate conduits on dwelling unit services rated up to 400 amps, 120/240 volt, 3-wire, single-phase only. Such paralleled conductors must comply with all of the provisions of NEC 310-4.

● 1999 National Electrical Code changes

Another reminder that the 1999 NEC will be effective on March 15, 1999. Our inspectors will allow a transition period of approximately 90 days (till June 30, 1999) when <u>either</u> the 1996 or the 1999 code (not a mixture) can be applied to an electrical installation.

Many exceptions have been written into positive language, language was modified to better express the intent of the code panels, and some articles have been radically reorganized or renumbered. Most of the technical changes are less rigid than the requirements of the articles in previous editions.

We feel that 1999 NEC 225-30 (formerly covered by 1996 NEC 225-8) deserves special attention because the economic consequences of missing this change will be severe. The issue is complicated by the fact that the new requirements of this article used to be included in our WAC rules from April 1993 till September 1997.

1999 NEC 225-30 states *"Where more than one building or other structure is on the same property and under single management, each building or other structure served <u>shall be supplied by one feeder or branch circuit</u> unless permitted in (a) through (e). For the purpose of this section, a multiwire branch circuit shall be considered a single circuit."* Sections (a) through (e) describe special conditions, occupancies, requirements, characteristics, and procedures that can possibly allow additional branch circuits or feeders. Your electrical system designs for such buildings should include adequate capacity so future loads will be able to remain in compliance with this article.

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 2 No. 2** **February 1999**

Electrical code issues and answers.

● Effective date of the 1999 National Electrical Code

The 1999 NEC will be effective on March 15, 1999. The department will allow a transition period of approximately 90 days (till June 30, 1999) when either the 1996 or the 1999 code (not a mixture) can be applied to an electrical installation. This will allow contractors and electricians time to get training on 1999 code changes.

● Household ranges and cooking appliances

Article 210-19(b) of the National Electrical Code states that *"Branch circuit conductors supplying household ranges, wall-mounted ovens, counter-mounted cooking units, and other household cooking appliances shall have an ampacity not less than the rating of the branch circuit and not less than the maximum load to be served. For ranges of 8¾ KW or more rating, the minimum branch-circuit rating shall be 40 amps."* Exception No. 1 allows *"Tap conductors supplying electric ranges, wall mounted electric ovens, and counter mounted electric cooking units from a 50 ampere branch circuit shall have an ampacity of not less than 20 and shall be sufficient for the load to be served. The taps shall not be longer than necessary for servicing the appliance."* This tap may be part of the listed appliance or an appliance whip (tap) may be added in the field by the installer. It may only be of sufficient length to allow servicing of the appliance and must originate from a junction box that is adjacent to the appliance.

● Cathodic protection systems

This issue was decided by an administrative law judge and the decision was upheld in its entirety by the electrical board in April of 1996. The installation of the DC portion of a cathodic protection system (CPS) is not covered by the electrical statute. The AC dedicated circuit and rectifier must be installed by an electrical contractor and the equipment must be listed. The decision by the administrative law judge found "The installation of cathodic systems is not regulated by RCW 19.28" and further found that the installer of the wiring on the secondary side of the rectifier "needs no electrical license to install a cathodic protection system." The State adopted WAC 173-360 as the State Department of Ecology Regulations governing cathodic protection systems.

The department will inspect the branch circuit wiring to the rectifier and the rectifier itself for listing and labeling. Raceways for these systems installed in buildings or underground must comply with RCW 19.28. This part of the installation requires a contractors license, certified individuals to make the installation and an electrical work permit and inspection. The direct buried cathodic wire and connections to the tanks on the load side of the rectifier are under the jurisdiction of the Department of Ecology.

● Hard copies of electrical permit application must be posted on the job site

WAC 296-46-495(3) states that: *"The electrical work permit application shall be posted on the job site at a conspicuous location prior to beginning electrical work and at all times electrical work is performed."* The hard copy should be posted so that it will not be subject to damage by wind, rain, or weather. This may require some kind of plastic bag or other suitable protection. Approved work will be documented by the inspector with appropriate approval stickers and written legibly on the posted electrical work permit application (green) site hard copy. Accurate approval details, dates, areas, and action taken must be included on the site copy of the permit since this is the premises owner's only documentation of inspection results. **It is essential that the integrity of the hard copy be maintained by both the installer and the inspector.**

It is also required in WAC 296-46-495(1) that: *"The classification or type of facility to be inspected and the scope of the electrical work to be performed shall be clearly shown on the electrical work permit."* This information is necessary so that the inspector knows the complete scope of the work performed and all the areas within a facility where work was done. An accurate description eliminates confusion and possible return trips that may be required when the scope of the work or the area of the inspection is not clear. "One circuit" may be hard to locate in a department store. A proper description should include the area in the building the circuit can be found, where the circuit originates, and where it terminates.

● A new HVAC/refrigeration limited energy electrical specialty

A new HVAC/refrigeration specialty electrical contractor's license, administrator's certificate, and specialty electrical technician certificate are included in the revisions to WAC 296-46 and WAC 296-401A. The changes are part of the department's efforts to replace existing electrical section policies and practices with specific regulations in the WAC that are consistent with the requirements of the electrical installations law (RCW 19.28).

What are the limitations of this specialty? This specialty is limited to installation of low voltage, Class 2 HVAC and refrigeration control circuit cable for control of furnaces, heat pumps, and similar HVAC or refrigeration equipment. Class 2 control wiring to associated system components, such as thermostats, humidistats, low voltage damper controls outdoor temperature sensors, stand-alone duct smoke detectors, and zone control valves, is also included. The Class 2 wiring is limited to buildings that do not exceed three floors above grade, except for residential occupancies.

Can any line voltage work be done by this specialty? This specialty may install, service, maintain, repair, or replace HVAC/refrigeration electrical systems as long as the work is on the HVAC/refrigeration system itself. This specialty may replace line voltage components within the equipment, only if components are like in kind with identical voltage and current ratings. Wiring of (line voltage) branch circuit conductors, services, feeders, panelboards, or disconnect switches is not included in this certification. Short sections of raceway may be installed for access to or physical protection of cables, however wiring in conduit systems and wiring in classified locations is prohibited.

How can I qualify to take the HVAC/refrigeration limited energy technician exam? For applications received prior to March 1, 2000, persons will be eligible to take the HVAC/refrigeration limited energy technician specialty examination by submitting to the department a signed and notarized letter from employer(s) stating that they have "performed HVAC or refrigeration equipment installation, service, or repair and were employed for a minimum of two years by a contractor engaged full time in the business of HVAC or refrigeration equipment installation or repair work."

Employers must establish appropriate business status by supplying copies of their RCW 18.27 contractor's registration or business license for the time period being certified for themselves or their employees. Individuals will be permitted to take the HVAC/refrigeration limited energy technician specialty examination after submitting a qualifying application and paying the appropriate examination fees. Specialty electrical technician certificates will be issued upon successful passage of the examination. All individuals that submit applications prior to March 1, 2000 and qualify to take the exam will remain qualified to take the exam after that date.

After March 1, 2000, all applicants must show at least two years (4000 hours per WAC 296-401A-210) of experience as a certified trainee installing, servicing, or repairing HVAC or refrigeration systems under the direct supervision of an HVAC/refrigeration limited energy technician, a limited energy specialty electrician, or a journeyman electrician.

How can I continue to work while I prepare for the certification exam? In order to facilitate the transition from an uncertified workforce to certified workforce, applicants that meet the two-year experience requirements will be issued a special third year training certificate and be temporarily (until March 1, 2002) considered an HVAC/refrigeration limited energy technician for the purpose of working within the scope of this specialty without supervision and for the purpose of supervising first and second year trainees on the job site. After March 1, 2002, you must have successfully passed the certificate examination to perform this work without supervision or to supervise trainees. If individuals have less than two years of experience, on or before March 1, 2000, they may apply for a training certificate level comparable to the hours for which they can provide proof of experience.

Will I be able to do HVAC/refrigeration limited energy control wiring or electrical repair without this certification? No. Labor and Industries' compliance officers and electrical inspectors will determine that each person doing electrical work on the job site has a proper journeyman, specialty, or trainee certificate per WAC 296-401A sections 100, 105, and 500. Not more than two trainees shall be permitted to work on a job site for every specialty electrical technician, specialty electrician, or journeyman electrician working as a specialty electrician. HVAC/refrigeration limited energy technician trainees may work unsupervised during their second year when installing HVAC systems with controls consisting of a single thermostat in one and two family dwelling units only.

Are there any additional requirements once I have obtained certification? In order to renew an HVAC/refrigeration limited energy technician certificate, the holder must demonstrate evidence of completion of an approved continuing education course(s) of at least eight classroom hours duration per year of the prior certification period. At least eight of those total hours shall be on the current National Electrical Code changes. Currently the certification period is three years (36 months), so 24 hours of continuing education units are required for renewal.

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 2 No. 1** **January 1999**

Electrical code issues and answers.

● Ready for inspection?

What work needs to be done before an electrical installation is considered "ready for inspection?" The answer depends on the scope of work, size of the job, type of construction, and the fee paid for the electrical work permit. Some projects require progressive inspections while others do not.

Permit fees are described in WAC 296-46-910 and all fees are calculated per sections (1) through (5). These fees have been established to fully fund the cost of the electrical inspection program. The cost of re-inspecting corrections is estimated and averaged into the fees in the schedule. On all jobs where the inspection fee in WAC 296-46-910 is <u>less</u> than the equivalent of two progress inspections ($64.50), it is intended that the work done will be inspected in one trip to the job site. A job requiring more than one requested inspection trip must have a fee that supports the number of progressive inspections made. Those that do not will be assessed progressive inspection fees as described in WAC 296-46-910(5)(k) MISCELLANEOUS. (A re-inspection trip to verify the completion of electrical safety corrections written during a requested inspection is not charged as a progressive inspection trip.)

For non-progressive inspection jobs, "ready for inspection" means that all electrical work other than the final trim is completed. This includes installation of all overcurrent protection devices (circuit breakers and fuses), all circuits identified in the panel schedule, and completion of all wiring involved in the work being done.

For projects that need progressive type inspections, "ready for inspection" means that all electrical work in the area to be inspected is complete. All structural elements and mechanical systems, such as plumbing, duct work, and heating and air conditioning equipment, must be installed in the areas where electrical inspection is requested. Electrical inspectors will not make assumptions about the equipment installations being done by other trades that may effect the access to or safety requirements of the electrical equipment.

● Multiple wire terminations in the same terminal lug

NEC 110-14(a) of the states in part that: *"Terminals for more than one conductor and terminals used to connect aluminum shall be so identified."* NEC 110-3(b) requires that: *"Listed or labeled equipment shall be installed, used, or both, in accordance with any instructions included in the listing or labeling."* The listing and labeling of terminals includes the conductor size, the number of conductors, and any combinations of conductors that are allowed to terminate in a single lug. This information may be marked directly on the terminal or may be included in manufacturer's information located on the equipment, such as a panelboard label.

The instructions in a panelboard may allow multiple wire terminations on a neutral bar terminal. However, most panelboard manufacturers only allow multiple <u>equipment grounding conductors</u> in a single terminal. Grounded circuit (neutral) conductors are usually limited to one wire per terminal. Most grounded branch circuit (neutral) conductors carry the full circuit current while the circuit is in use. The regular heating and cooling effects of variations in branch circuit current flow cause expansion and contraction of the conductors and can cause doubled-up neutral terminations to loosen in the lug. Equipment grounding conductors do not carry any current during normal branch circuit operation. The installer must read the manufacturer's installation instructions included with a panelboard to determine if the terminals are approved for multiple neutral conductors and/or multiple equipment grounding conductors.

● Electrical continuity of metal raceways and enclosures

(NEC 300-10) requires, *"Metal raceways, cable armor, and other metal enclosures for conductors shall be <u>metallically joined</u> together into a continuous electric conductor and shall be so connected to all boxes, fittings, and cabinets as to provide effective electrical continuity."* When installing rigid metal conduit the use of two locknuts, one inside and one outside of each enclosure, is required. Other approved conduit fittings, such as threaded conduit hubs and connectors with shoulders that seat firmly against an enclosure can also meet the continuity requirements above. When required by NEC 250-72 for service-type bonding, the installation of grounding bushings or other approved bonding fittings does not eliminate the need for double locknuts. Rigid metal conduit and conduit nipples,

regardless of length, must be secured to enclosures using two locknuts. Locknuts are cupped or serrated on one side to insure that good metal to metal contact is made between the locknut and the enclosure. In order to obtain the continuity required by NEC 300-10, a locknut must bind into the metal of the enclosure from each side. This correction is written most often when conduit nipples are installed between meter enclosures and service panels and the installer does not position the required backing locknuts behind both enclosures.

● Inspection fees for mobile homes, modular homes, commercial coaches, etc.

A mobile home service fee (from WAC 296-46-910(1)(e)(i) RESIDENTIAL) is intended for inspection of a service on a mobile home lot, regardless of ampacity, supplying a mobile home feeder. A mobile home feeder, not inspected at the same time as the service, has a separate fee (also from WAC 296-46-910(1)(e)(i) RESIDENTIAL). If both the mobile home service and feeder are ready for inspection at one time, the fee for inspecting both is reduced and shown in WAC 296-46-910(1)(e)(ii). A dwelling unit modular building (FAS gold label) service or feeder is inspected for the same fee as a mobile home service or feeder.

On residential property with a mobile or modular home, inspection fees for outbuildings and detached garages are from WAC 296-46-910(1)(a)(ii) and (iii). An "outbuilding" is a structure that serves a direct accessory function to a residence, such as a pump house or storage building. "Outbuildings" do not include buildings used for commercial type occupancies or additional dwelling occupancies. All other structures, services, and feeders on residential property will have inspection fees based on table WAC 296-46-910(1)(b) and the ampacity of the service or feeder equipment.

Inspection fees for services or feeders to modular buildings (FAS gold label) intended for educational, office, or other non-dwelling unit use are calculated from the tables in WAC 296-46-910(2)(a) COMMERCIAL / INDUSTRIAL. Services and feeders for commercial coach (FAS black label) units are priced from the same commercial / industrial tables. Commercial coaches used in temporary applications will be permitted to have service and feeder fees calculated from the tables in WAC 296-46-910(3)(b) TEMPORARY SERVICES. Temporary electrical power and lighting installations are intended to be used during the period of construction, remodeling, maintenance, repair, or demolition of buildings, structures, equipment, or similar activities. Temporary electrical power and lighting installations are allowed during emergencies and for tests, experiments, and developmental work. Temporary electrical power and lighting installations are allowed for a period not to exceed 90 days for Christmas decorative lighting and similar purposes. Temporary wiring shall be removed immediately upon completion of construction or purpose for which the wiring was installed.

● Wiring methods required inside walk-in coolers and freezers

The interiors of walk-in coolers and freezers will be permitted to be wired as dry locations as defined in NEC Article 100: *"A location not normally subject to dampness or wetness. A location classified as dry may be temporarily subject to dampness or wetness, as in the case of a building under construction."* Though such properly operating coolers and freezers are usually subject to dampness or wetness only during cleaning or maintenance operations, preventing the introduction of moisture from outside the refrigerated environment is essential to keeping the interior a dry location. All installations must have the interior raceway system penetrations to the outside sealed to prevent the circulation of air from warmer areas to colder areas, as required by NEC 300-7(a). Duct seal or spray-foam insulation properly installed can provide adequate sealing to prevent air circulation and the resulting condensation.

Although the space is classified as a dry location, field installed wiring inside coolers and freezers has additional requirements that must be considered. Wiring should be in raceway to protect conductors from physical damage. Lighting fixtures should be guarded to prevent physical damage. Contractors and electricians should be aware that local health officials may enforce additional requirements and restrictions on equipment installed inside walk-in coolers and freezers in order to maintain proper sanitation in such food storage and handling areas.

● 3rd and 4th year trainee cards are required to accumulate the hours for eligibility to test for journeyman electrician certification

This information appeared in a previous ELECTRICAL CURRENTS (Vol. 1, No. 4; April 1998), but it bears repeating. Hours toward journeyman or specialty electrician experience cannot be accumulated unless you have a valid training certificate in your possession. A training certificate must be renewed annually. An individual that has a valid specialty electrician certificate must also have a current training certificate in order to record hours of experience toward an additional specialty or toward journeyman certification. A specialty electrician certificate only qualifies an individual to do work in their specialty; it is not equivalent to a training certificate.

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 12** **December 1998**

Our 12th month! Electrical code issues and answers.

● Plan review of SPI funded school projects

Cities that have their own electrical inspection programs have been doing their own plan review as required by WAC 296-46-140 effective June 30, 1998. (See *September 1998 ELECTRICAL CURRENTS*.) There was an exception for Superintendent of Public Instruction (SPI) funded school projects because SPI WAC rules required Labor and Industries to do the electrical plan review. However, as of November 1, 1998, SPI rules have been changed and cities are now allowed to do these school project reviews. The department has supplied the Superintendent of Public Instruction's office with the names of the municipalities on record as having their own electrical inspection programs. All new submittals sent to the department for projects within these jurisdictions will be returned, so that they can be resubmitted to the city responsible for the electrical inspection.

● Fee schedule

New electrical work permit fees have been in effect since June 30, 1998. To promote consistency in the application of the fee schedule statewide, field services personnel and electrical inspectors are currently being trained to properly apply these fees. Copies of the materials used in the training sessions are available to our customers in an effort to help make the fee schedule more user friendly. Residential and commercial fee calculation worksheets created to aid customers in the process of purchasing a permit and calculating correct fees are also available on our website and at our service locations.

The department's statutory mandate is to "*set by rule a schedule of license and electrical work permit fees that will cover the costs of administration and enforcement of this chapter" (RCW 19.28.210)*, subject to the recommendations and approval of the Electrical Board. It is the department's responsibility to insure that the inspection activity requested by our customers is fully supported by the inspection fees. Electrical installations are complex and consequently the inspection fee schedule (WAC 296-46-910) that has evolved over the last 15-20 years is complex. The department is dedicated to helping our customers better understand how to accurately determine inspection fees. We will include regular articles regarding details of the fee schedule in this newsletter. The following is the first of such articles.

● Inspection fees for altered services and feeders

Inspections of altered services and feeders are priced 15-20% less than new work of the same size and rating. For this lower fee rate, it is the intent that the work can be inspected in one requested inspection trip. In order to qualify for this lower rate, there are three types of electrical modifications considered in this category. The first is when existing equipment is replaced with new equipment in exactly the same location. This is normally done when a damaged or obsolete panel is being replaced with a new one. The second is when existing equipment is moved to a new location. This is typical when structural modifications or partition wall alterations require panel relocations. When new equipment is installed in a new location, even if immediately adjacent to old equipment, the work is no longer eligible for the lower altered service or feeder rate. The third example of a modification that qualifies as an altered service or feeder is a panel upgrade (size increase) in the exact same location as an existing service or feeder panel. This type of an upgrade would be sized according to the resulting service rating when the modifications are completed. In some upgrade installations where existing service equipment and conductors are left completely unaltered and require no additional inspection, the inspection fee can be calculated for the added service capacity only.

The inspection of existing circuits that are reconnected to new equipment in the same location, and the inspection of circuits extended to existing equipment in its new location, are included in the altered service or feeder fee for both residential and commercial construction. In one and two family dwelling unit construction where the fee basis is square-footage, the department has allowed some additional new circuits to be added to existing remodeled spaces under the altered service or feeder fee. It is expected that such circuit additions will be completed and ready for inspection during the initial inspection trip. If the circumstances of a particular construction schedule require

requesting more than one inspection for an altered service or feeder fee, then additional progress inspection trip fees (at $32.25 per half-hour) will be required. A re-inspection trip to verify the completion of electrical safety corrections that were written during a requested inspection is not charged as a progress inspection trip. However, an additional re-inspection trip necessitated by improperly completed corrections, or creating more electrical safety corrections through negligence, carelessness, or improperly installed electrical work will be assessed an inspection trip fee per WAC 296-46-910(5)(j)(iv).

It should be noted that in residential remodel work that involves the complete removal of existing wiring, the re-wiring of these spaces would be evaluated as new electrical construction. Fees will be based on the square-footage re-wired in accordance with WAC 296-46-910(1)(a) RESIDENTIAL. Additionally, rooms and spaces created when new square-footage is added to an existing building are also new construction. Fees for this type of work will be based on square-footage and also calculated per WAC 296-46-910(1)(a) RESIDENTIAL.

● Aircraft storage buildings on residential property.

NEC 513-1 Definition states *"An aircraft hanger is a location used for storage or servicing of aircraft in which gasoline, or other volatile flammable liquids or flammable gases or any jet fuels are used. It shall not include locations used exclusively for aircraft that have never contained such liquids or gases, or aircraft drained and properly purged (unfueled)."* Buildings on residential property used for storage of private aircraft are not specifically addressed in the National Electrical Code. However, those buildings that fit the definition of an aircraft hangar and <u>have been classified as such by the local building department</u> (Uniform Building Code, group and division, S-5 and H-5) will be inspected to meet all the applicable provisions found in Article 513. One of the main concerns in these buildings is the presence of flammable liquids or flammable gases. All sizes of aircraft may be equipped with fuel drains that are used to eliminate the presence of water in the fuel tank. This pre-flight test is often done in the hangar. A major risk of fuel leakage comes from maintenance that is routinely done in the hanger. If the plane won't fly or isn't safe to fly there's no way to get it to a repair facility.

It should be noted that contractors and electricians doing the electrical work in those buildings classified as aircraft hangars must be (01) general electrical contractors or certified as (EL01) journeyman electricians. The wiring methods required for aircraft hangars are not within the scope of residential specialty contractor licensing or residential specialty electrician certification. Wiring for those storage buildings on residential property <u>not</u> classified as aircraft hangers must comply with any of the wiring methods found in Chapter 3 of the National Electrical Code.

Buildings classified as aircraft hangers are not "outbuildings" (serving a direct accessory function to the dwelling, such as a pump house) or "detached garages" as described in the residential fee schedule. Proper inspection fees are found in WAC 296-46-910, table (1)(b) for multifamily dwellings and miscellaneous residential structures. The fee will be based on the ampacity of the building service or feeder.

● Sizing equipment bonding jumpers on the supply side of a service

When bonding metallic raceways that contain service entrance conductors in an open bottom switchboard or metallic enclosure where bonding bushings are used, the equipment bonding jumper, *"shall not be smaller than the sizes shown in Table 250-94 for grounding electrode conductors. Where the service-entrance phase conductors are larger than 1100 kcmil copper or 1750 kcmil aluminum, the bonding jumper shall have an area not less than 12 ½ percent of the area of the largest phase conductor except that, where the phase conductors and the bonding jumper are of different materials (copper or aluminum), the minimum size of the bonding jumper shall be based on the assumed use of phase conductors of the same material as the bonding jumper and with an ampacity equivalent to that of the installed phase conductors. Where the service-entrance conductors are paralleled in two or more raceways or cables, the equipment bonding jumper, where routed with the raceways or cables, shall be run in parallel. The size of the bonding jumper for each raceway or cable shall be based on the size of the service-entrance conductors in each raceway or cable."* Each paralleled raceway can have an individual bonding jumper properly terminated in the bonding bushing lug and in an approved neutral bus, equipment ground bus, or grounding terminal on the other end.

It is permissible to use a single conductor to bond all of the paralleled raceways together and then make a single connection to the neutral bus or equipment grounding bus. However, the conductor must be sized as shown above and based upon the largest <u>total</u> cross-sectional area of all the paralleled conductors for any one phase. If there are a large number of paralleled conductors, 12 ½ percent of the <u>total</u> area of the largest phase conductor can be a very large wire. Problems may be encountered finding large lugs that will terminate on a bonding bushing in a manner that can be approved.

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 11** **November 1998**

Our 11th month! Electrical code issues and answers.

● Public hearings for proposed changes to WAC 296-46 and 296-401A will be held:

December 11, 1998 1:00 PM
Department of Labor and Industries Building
Auditorium
7273 Linderson Way, Tumwater

December 16, 1998 1:00 PM
Spokane Service Location
Fourth Floor Conference Room
901 N. Monroe, Suite 100, Spokane

The proposed amendments adopt the 1999 National Electrical Code, create a new limited energy electrical contractor license, administrator certificate and HVAC/refrigeration limited energy technician certificate for work performed on HVAC/refrigeration limited energy control circuits. Also added are some technical changes and clarification of existing rule sections. The tentative adoption date for these rules is January 25, 1999 and the tentative effective date is February 26, 1999.

Copies of the proposed rule changes are available upon request by calling toll free at (800) 547-8367; or by written request to the Department of Labor and Industries, Specialty Compliance Services Division, P.O. Box 44460, Olympia, WA 98504-4460. Copies of the proposed rules will also be available at the public hearings and on the department's Internet site address in the footer below.

Oral and/or written comments on the proposed rules will be accepted at the public hearings. Comments on the proposed rules may be submitted to the department prior to or until December 28, 1998. Comments may be faxed to (360) 902-5292 (comments submitted by fax must be 10 pages or less).

● Plan review submittals based on 30-day metered demand data

The use of 30-day demand data in the optional calculation for additional load to an existing installation, as allowed in NEC 220-35(1) Exception, must also meet the requirements of WAC 296-46-140(4). Any demand data submitted must include all of the following: a) the date of the measurements; b) a diagram of the electrical system identifying the point(s) of measurement; c) building demand measured continuously on the highest-loaded phase of the feeder or service over a thirty-day period, with demand peak clearly identified. (Peak demand shall be defined as the maximum average demand over a fifteen-minute interval.)

When using this calculation method and submitting it to electrical plan review or the local field inspector, the use of the form on page 20 in the Electrical Plan Review Submittal Guide (available on our Internet home page, address below) will eliminate most problems. Keep in mind that the submitted data must be taken with a recording type meter and that the plans examiner/electrical inspector will require copies of the significant peak readings in the recorded data. Also, adjustment for system power factor, seasonal adjustment for heating or cooling loads (the greater of the two), and occupancy adjustment (change in occupancy of the building compared to occupancy at time of load study) must be made for this calculation method. Explanations of how the adjustment factors were derived and how the data readings were compiled are to be included with the presentation.

● Grounding equipment in patient care areas of healthcare occupancies

NEC 517-13(a) requires that *"In an area used for patient care, the grounding terminals of all receptacles and all noncurrent-carrying conductive surfaces of fixed electric equipment likely to become energized that are* ***subject to contact,*** *operating at over 100 volts, shall be grounded by an insulated copper conductor. The grounding conductor shall be sized in accordance with Table 250-95 and installed in metal raceways with the branch-circuit conductors supplying these receptacles and fixed equipment."* Exception No.1 adds type MI, MC, or AC cables to the permitted wiring methods, *"provided the outer metal armor or sheath of the cable is identified as an acceptable grounding return path."* These cables are identified by the manufacturer as "hospital-grade" or as complying with NEC 517 in some distinctive manner, such as green coloring or stripes on the cable sheath and/or appropriate information on the product listing and identification tags.

In patient care areas, lighting fixtures that are located "*more than 7 ½ ft (2.29m) above the floor shall not be required to be grounded by an insulated grounding conductor"* as permitted by Exception No.3 to NEC 517-13(a). Due to its elevation the lighting fixture is not considered to be subject to contact and therefore an insulated equipment grounding conductor is not required. This exception does not allow non-metallic sheathed cable or non-metallic raceways as the wiring method to these fixtures.

NEC 517-13(b) requires that *"**all branch circuits** serving patient care areas shall be provided with a ground path for fault current by installation in a **metal raceway system or cable** assembly."* The apparent permissiveness of Exception No.3 to NEC 517-13(a) only addresses the requirement for an insulated equipment grounding conductor. NEC 517-13(b) makes is clear that a metal raceway system approved for grounding or metal sheathed cable assembly is always required for circuits that supply a patient care area.

● Service conductors considered "outside of a building"

When are service conductors inside of a building and when are they outside? This question has been asked several times in recent months and warrants a determination.

Any time conductors are installed within the "lines of a building" it is considered to be inside the building except as otherwise allowed by NEC 230-6. *"Conductors shall be considered outside of a building or other structure under any of the following conditions: (1) where installed under not less than 2 in. (50.8mm) of concrete beneath a building or other structure; (2) where installed within a building or other structure in a raceway that is encased in concrete or brick not less than 2 in. (50.8mm) thick; or (3) where installed in a transformer vault conforming to the requirements of Article 450, Part C."*

Conductors that are installed **under** a building are considered to be inside the building, regardless of the burial depth, unless one of the above conditions from NEC 230-6 is met. It should also be noted that NEC 300-5(c) requires underground cables installed under a building to be in a raceway that extends beyond the outside walls of the building.

NEC 230-70(a) requires that *"The service disconnecting means shall be installed at a readily accessible location either outside of a building or structure, or inside nearest the point of entrance of the service conductors."* WAC 296-46-230-40(5) allows up to 15 feet of service raceway to be considered "***nearest the point of entrance."*** The "15 foot rule" is very generous. Whether buried or not, raceway inside the building lines cannot extend beyond 15 feet unless one of the conditions of NEC 230-6 allows the raceway or a portion of it to be considered outside the building.

● Ground rods at generators

A premises wiring system whose power is derived from a generator and the generator has no direct electrical connection, including a solidly connected grounded circuit conductor (neutral), to supply conductors originating in another system, must be grounded as specified in Section 250-26. This requires a bonding jumper to connect the equipment grounding conductors to the grounded conductor and a grounding electrode conductor to connect the grounded conductors to a grounding electrode. This is a separately derived system, and a grounding electrode system must be properly established at the generator location.

NEC 250-5 (FPN No. 1) states: *An alternate alternating-current power source such as an on-site generator is not a separately derived system if the neutral is solidly interconnected to a service-supplied system neutral."* The most common example of this is an on-site generator installed as a backup source of power. This is the type that would employ a transfer switch to transfer utility and generator power. The transfer switch does not break the connection between the generator neutral and the utility grounded circuit conductor (neutral). The generator is required to have an equipment grounding conductor to ground any exposed noncurrent-carrying metal parts. This equipment ground must be a type specified in NEC 250-91(b) and run from the normal system ground to the generator frame. It should be noted that a supplementary grounding electrode at the generator location is allowed under NEC 250-91(c). A grounding electrode is not required by the NEC, but could be recommended by the generator manufacturer.

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 10** **October 1998**

Our 10th month! Electrical code issues and answers.

● Sizing the grounding electrode conductor

Article 250-23(a) of the National Electrical Code (NEC) requires that if a premises wiring system is supplied by an AC service that is grounded, a grounding electrode conductor must be installed to connect the grounding electrode to the grounded circuit (neutral) conductor at the service. NEC 250-94 requires that the grounding electrode conductor be sized according to Table 250-94 based on the size of the service entrance conductors unless otherwise permitted by exception.

When conductors are run in parallel (electrically joined at both ends to form a single conductor) the total circular mil area of all conductors in a set of conductors must be used in determining the size of the grounding electrode conductor. This is very straightforward when using conductors that are marked in thousand circular mils (kcmil). If you have two 250 kcmil copper conductors in parallel, the sum is 500 kcmil. Table 250-94 requires the use of a 1/0 AWG copper or 3/0 AWG aluminum grounding electrode conductor.

If you have three 1/0 AWG copper conductors in parallel, how do you size the grounding electrode conductor? Since the kcmil size is not marked on the conductor, a simple calculation is required. Table 8 in Chapter 9 of the NEC lists the circular mil area of conductors that are marked in American Wire Gauge (AWG). A 1/0 AWG conductor has an area of 105,600 circular mils. The sum of three conductors is 316,800 circular mils (316.8 kcmil). Table 250-94 requires a #2 AWG copper or 1/0 AWG aluminum grounding electrode conductor when copper service entrance conductors over 3/0 AWG through 350 kcmil are installed.

● Sizing equipment grounding conductors

Equipment grounding conductors must be sized by Table 250-95 of the National Electrical Code. The conductor size is based on the ampere rating of the overcurrent protection device that protects the circuit conductors. When a single equipment grounding conductor is run with multiple circuits (or parallel conductors) in the same raceway, it shall be **sized for the largest overcurrent device** protecting conductors in the raceway. Where parallel runs of conductors are installed in separate raceways, the equipment grounding conductor **in each raceway** must be full-sized and based on the ampere rating of the overcurrent device protecting the conductors.

Example #1: One 500 kcmil THWN copper conductor per phase is installed in a single non-metallic conduit and is protected by a 400 amp overcurrent device. Table 250-95 requires a #3 AWG copper or #1 AWG aluminum equipment grounding conductor be installed in the raceway.

Example #2: Three 1/0 AWG THWN copper conductors per phase are installed in parallel in three non-metallic conduits and this installation is also protected by a 400 amp overcurrent device. Table 250-95 requires that a #3 AWG copper or #1 AWG aluminum equipment grounding conductor be installed **in each of the three separate raceways**.

All of the requirements for running conductors in parallel in NEC 310-4 also apply to equipment grounding conductors run in parallel, with the exception that equipment grounding conductors shall be sized per NEC 250-95 and are permitted to be smaller than 1/0 AWG. It should also be noted that when phase conductors are adjusted in size to compensate for voltage drop, equipment grounding conductors must be adjusted in size proportionately according to circular mil area.

● Access to inspect installations of elevated signs or equipment

Installations of pole or building mounted electric signs (or other electrical installations that require special equipment for access) must be inspected. WAC 296-46-090 requires that *"At the time of inspection electrical wiring subject to this chapter must be sufficiently accessible to permit the inspector to visually inspect the installation to verify conformance with the National Electrical Code and any other requirements of chapter 296-46 WAC."* The electrical contractor's designated administrator is required to *"ensure that all electrical work complies with the electrical installation laws and rules of the state."* The contractor that performs an electrical

installation requiring bucket or ladder trucks, scaffolding, special ladders, or other such equipment must make that equipment available to conduct the electrical inspection. The contractor should make prior arrangements with the electrical inspector to provide access to conduct these inspections. The department's inspectors will make every possible effort to accommodate the electrical contractor's schedule.

● Cable tray system bonding and grounding

In general, cable trays are required to be installed as a complete system. NEC 318-7 requires all metallic cable trays that support electrical conductors to be grounded per NEC 250. Separate cable tray systems are permitted to be mechanically discontinuous between cable tray runs or between the cable tray runs and equipment served. However, support for the cables must be maintained in accordance with their respective requirements in Chapter 3; and all discontinuous metal cable tray runs or raceways routing conductors between cable tray runs and equipment must be bonded in conformance with NEC 250-75. This bonding requirement applies to all cable trays containing power conductors, control and/or signal conductors, or limited energy or communications conductors.

Proper bonding means electrical continuity and the capacity to conduct safely any fault current likely to be imposed on the bonding connections. "Likely to be imposed" currents would never be less than the overcurrent protection for the largest power conductors contained within the cable tray (per NEC 250-95) and could be much higher than that value if there were larger capacity circuits (outside of the cable tray) capable of contacting the metal cable trays or raceways under fault conditions. Listed lugs or bonding bushings with bonding jumpers, or listed fittings approved for the purpose must be used for these bonding connections.

● Manufactured/mobile home inspections and permits

Manufactured/mobile homes are engineered structures that require electrical, mechanical, and structural plan review before they are built. The construction of these units is under the jurisdiction of the department's Factory Assembled Structures (FAS) section. Installations that effect a unit's mechanical systems or design, or add load to the unit's interior electrical panel, such as interior wiring alterations, air conditioners, heat pumps, electrical furnaces, and other equipment located in, on, or immediately adjacent to the home require a **Factory Assembled Structure Alteration Permit** and inspection by the (FAS) construction compliance inspector. Structures that are not part of the original plan approval of the home, but are attached or supported from the mobile home, require an alteration permit and inspection by FAS.

Electrical service and the feeder to a manufactured/mobile home sub panel, frame bonding connections, and the field connection of crossover wiring between sections are under the jurisdiction of the department's Electrical Inspection section and require an **Electrical Work Permit** and inspection by the electrical inspector. Installations such as area lighting, detached carports, garages, pumps and well houses also require an electrical work permit and inspection by the electrical inspector. It is typical for these circuits or feeders to originate in the accessory disconnect space required by NEC 550-23(c) in the mobile home service equipment.

If installers or property owners choose to supply circuits for buildings and/or equipment (under the jurisdiction of the Electrical Inspection section) from the panel located inside the manufactured/mobile home, there are additional requirements that must be met. Because these are engineered units, a load calculation for the home (supplied by the installer) must be available for use by the electrical inspector to evaluate the additional load on the system. Circuits or feeders from the mobile home's panel that are routed under the chassis on surfaces exposed to physical damage during transport or set-up must be protected by rigid metal conduit, intermediate metal conduit, or schedule 80 rigid non metallic conduit. Electrical metallic tubing (EMT) or schedule 40 rigid non metallic conduit may be used on protected surfaces if closely routed against frames and equipment enclosures. All raceways must terminate in a junction box that is located under the home adjacent to the outside wall. The conductors must be suitable for wet locations. Cable type wiring methods are not approved on the surface under a mobile home chassis.

It is the intent of the department to require only one of the above permits whenever possible. However, there may be installations that require both an alteration permit and electrical permit. Please call the local FAS or electrical inspector if you have an installation that you are not sure about, before you obtain a permit. It should also be noted, that some structures and alterations may require a permit from the local building authority.

● Target Date for 1999 National Electrical Code Adoption

The tentative WAC rule filing date is November 4, 1998. Public hearings will be scheduled for December 11, 1998 in Tumwater and December 16, 1998 in Spokane. The tentative effective date for the 1999 NEC is February 26, 1999.

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 9** **September 1998**

Our 9th month! Electrical code issues and answers.

● Plan review within city inspection jurisdictions.

WAC 296-46-140 (1) was revised effective June 30, 1998. The changes make it clear that *"Plan review is part of the electrical inspection process,"* and that plans for electrical installations within the jurisdiction of cities performing electrical inspections *"shall be submitted to that city for review rather than to the department."* It is appropriate that cities choosing to do electrical inspections assume **all** of the responsibility for their inspections, including the required plan review for proper code-compliant equipment capacity and rating in healthcare, institutional, and educational occupancies. **It should be noted that Superintendent of Public Instruction (SPI) rules require Labor and Industries plan review and approval when SPI funding is involved in educational construction projects.** Except for SPI projects, the department has been returning plan review submittals to the submitter when the projects are within the inspection jurisdiction of cities. For additional plan review information, see our internet home page for the Electrical Plan Review Submittal Guide.

● Bonding of metal raceways on over 250 volt systems.

For any circuits of over 250 volts to ground, NEC Article 250-76 requires that the electrical continuity of metal raceways and metal sheathed cable be ensured by "service-type" bonding methods from NEC 250-72(b) through (e). This requires the use of threaded hubs, bonding bushings with bonding jumpers, bonding-type locknuts, and other approved devices. By exception, if metal enclosures do not have concentric, eccentric, or oversized knockouts; or if the eccentric or concentric knockouts have been tested and listed for the use; then regular double locknuts, fittings with shoulders that seat firmly against the enclosure secured with single locknuts, and other listed fittings are permitted to bond the raceways. On both ends of connecting raceway or cable sections in over 250 volt systems, this additional attention to bonding is extremely important where the metal raceway or cable sheath serves as the circuit equipment grounding conductor.

If an equipment grounding conductor is installed inside the raceway or cable along with the circuit conductors, and metal boxes and enclosures are connected to the equipment grounding conductors per NEC 250-114(a), then the over 250 volt raceway bonding requirements do not need to be as strictly applied. Sufficient protection from arcing-faults and an adequate low impedance ground fault path can be accomplished by ensuring that connecting metal raceways or cable sheaths have bonding on one end meeting the requirements of NEC 250-76 or its exception. Normal raceway or cable connections may be used on the other end.

● Laundry receptacle requirements with stackable laundry equipment.

If a 30-amp, 240/120 volt circuit (and receptacle) is installed for a stackable washer/dryer; is a 20-amp, 120 volt laundry branch circuit (and receptacle) still required? The answer is yes.

A proposal (#2-294) was made to change the language in (1999) NEC 220-4(c) so that it required at least one additional "branch circuit no less than 20 ampere" shall be provided to supply the laundry receptacle outlet(s). The substantiation was: "There is a conflict in situations where a stackable washer/dryer requires more than a 20 ampere circuit. This could require a circuit for the stackable washer/dryer as well as the required 20A circuit."

During the comments stage of the code cycle, an additional recommendation (#2-125) was made to address this situation as follows: "In dwelling units of multifamily buildings with limited laundry space designed for stackable washer and dryer facilities only, a laundry receptacle shall not be required other than the receptacle for the laundry equipment." Part of the substantiation presented was that with limited building space laundry areas "are being designed to accommodate only the stackable type washer and dryer, with room for nothing else."

Code Panel No. 2 rejected both proposals with the following statement: *"A 20 ampere circuit is required for the laundry receptacle outlets. An additional circuit would be required for a specific appliance."*(Such as stackable washer/dryers or electric clothes dryers). The intention of the code panel is clear. For additional information on laundry area receptacles, refer to the previous discussion of this topic in the March 1998 edition of ELECTRICAL CURRENTS (available on our Internet home page).

● Use of flexible cords for supplying gas furnaces and other circuit requirements.

A gas furnace is not a portable appliance, not stationary equipment requiring frequent interchange, the fastening means and mechanical connections are not specifically designed to permit ready removal for maintenance and repair, and it is not identified for flexible cord connection. NEC 400-8 states *"flexible cords and cables shall not be used as a substitute for the fixed wiring of a structure."* Although some installers attempt to use this as a quick, inexpensive method to make a power connection, flexible cords can not be used as the wiring method for a gas furnace circuit.

Additional requirements for a gas furnace circuit can be found in NEC 422-7. A gas furnace is central heating equipment other than fixed electric space-heating equipment and it *"shall be supplied by an individual branch circuit."* An exception allows auxiliary equipment directly associated with the heating equipment, such as pumps, valves, electrostatic air cleaners, and humidifiers, to be connected to the same branch circuit. Transfer equipment used to supply gas furnace branch circuits on loss of normal electrical power must be approved for the intended use per NEC 702-4 & 6 for Optional Standby Systems and NEC 701-4 & 7 for Legally Required Standby Systems.

● Information required on electrical work permit applications.

In order for the department to provide better service to its customers it is essential that the Electrical Work Permit Application Form (F500-001-000) is completely and legibly filled out. To avoid unnecessary delays in the inspection process please pay particular attention to the following when completing the form:

1. Complete **all** appropriate blanks. This includes the space on the application where a map is to be drawn. Vacations, illness or injury, and heavy development in a specific area can leave an inspection office temporarily under-staffed.. Inspectors often are asked to assist in doing inspections in areas that may be unfamiliar to them, and a map is essential to helping them quickly find a job site so that a timely inspection can be done. Many areas have such rapid growth that some new streets are not shown in commercially available map books. A new address on a new street can be impossible to find without a reference (map) to streets that do appear in commercial maps.

2. Provide a **detailed** description of the work being done. For example: "One new 20 amp/120 volt circuit to copy machine in managers office from service panel," instead of "1-5 circuits". It is important that the inspector knows the complete scope of the work performed and all the areas within a facility where work was done.

3. The person signing the permit application must be authorized to do so. These "**authorized**" individuals must have their signatures on file at the service location at which the applications are processed.

Additional details on electrical work permits and requirements for posting permits on job sites can be found in WAC 296-46-495.

● Grounding electrode conductor connections must be accessible.

Article 250-23 (a) of the National Electrical Code requires *"A premises wiring system that is supplied by an ac service that is grounded shall have at each service a grounding electrode conductor connected to a grounding electrode that complies with Part H of Article 250."*

It is also required that *"The grounding electrode conductor shall be connected to the grounded service conductor* (neutral) *at any **accessible** point from the load end of the service drop or service lateral to and including the terminal or bus to which the grounded service conductor is connected at the service disconnecting means."*

As it relates to the grounding electrode conductor connection to the grounded service conductor, the term "accessible" does not include a connection in any equipment that is sealed or locked by the serving utility, since these seals and/or locks are intended to restrict access. **Therefore a grounding electrode conductor termination in a CT enclosure, meter base, bus gutter, or other utility sealed enclosure is not accessible and in violation of NEC 250-23(a).**

Practices of serving utilities vary widely around the state. If you are working in the service area of a utility that you are not familiar with, check with them about their policies of sealing service enclosures before you terminate the grounding electrode conductors.

● Electrical section list server is now on line. Please subscribe!

We have a one way newsgroup established so that by e-mail message we can notify our subscribers of activity in the electrical section that will be of interest to stakeholders in the electrical construction industry. To subscribe to **Electrical News Announcements** send an e-mail message to majordomo@www.wa.gov with nothing in the subject line and the words **subscribe electrical** in the body of the message.

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 8** **August 1998**

Our 8th month! Electrical code issues and answers.

● Expansion joints in rigid nonmetallic conduit

Like all construction materials, rigid nonmetallic conduit will expand or contract with variations in temperatures. NEC 347-9 requires that expansion fittings *"shall be provided to compensate for thermal expansion and contraction where the length change, in accordance with the tables in Chapter 9, is expected to be greater than 0.25 in. (6.36mm) or greater in a straight run installed between securely mounted items such as boxes, cabinets, elbows, or other conduit terminations."* Conduit manufacturers may also require that up to 30 degrees temperature change be added when the installation is made in an area exposed to direct sunlight.

Example: A 10-foot straight length of conduit is installed between two junction boxes; the geographical area reaches a low temperature of 15ºF in the Winter and a high of 95ºF in the Summer; the conduit run is on the south side of the building and exposed to direct sunlight. The proper calculation is as follows:

Summer high (95ºF) minus winter low (15ºF) is a difference of 80 degrees. Since the conduit is exposed to direct sunlight, add an additional 30 degrees for radiant heating effects. The result is a 110 degree total temperature differential. Table 10 in Chapter 9 indicates a 100-foot run of conduit will change 4.5 in. The 10-foot length is 10% of the 100-ft. length found in the table. Therefore it will change 10% of 4.5 in. or 0.45 in. Since this length change is greater than 0.25 in. an expansion fitting is required. It should be noted that installation methods that allow for movement of the conduit relative to fixed parts of the system might adequately provide for expansion and contraction without damage.

● Disconnects for on-site sewage disposal systems

The disconnecting means for on-site septic system controllers and motors must meet all applicable requirements of the NEC and WAC 296-46-50002. NEC 430-102 requires a disconnect to be *"located in sight from"* both the controller location and the motor location, except when the disconnect that is in sight from the controller location is capable of being locked in the open position. NEC 430-107 requires that *"one of the disconnecting means shall be readily accessible."* NEC 380-3 requires that switches and circuit breakers be of the externally operable type. Article 100 of the NEC defines externally operable as: *"Capable of being operated without exposing the operator to contact with live parts."*

A circuit breaker contained in a pump control enclosure that has a cover secured by screws, or has no dead front within to protect personnel from exposure to live parts, does not comply with NEC 430-107 or NEC 380-3. In such cases a separate disconnect switch is required. Where there is no control enclosure and line voltage float switches function as the motor controller, a disconnecting means *"in sight"* from the tank access is required.

● Setting up contractor accounts

What is a contractor deposit account?

Contractor deposit is an account that the Department of Labor and Industries will set up for any electrical or construction contractor who is licensed or registered in the Contractor Registration Information System (CRIS) database.

How does this account work?

A contractor may deposit money into this account at any time. The contractor's license number will also be their account number. This account will allow contractors to pay for transactions including electrical permits and licensing fees without sending a check or walking the money into the local L & I office.

What type of account is it?

The account is a non-interest bearing account that is not protected from any legally acquired liens or attachments. Each transaction requires authorization from the contractor or his agent. In the case of an Electrical Work Permit Application the signature on the permit will meet this requirement. A monthly statement will be sent to the contractor showing all account activity.

How is an account set up?

An account may be set up by contacting the support staff at the nearest Department of Labor and Industries service location and providing written authorization to set up the account. It is recommended, but not required that an amount equal to the anticipated monthly activity be deposited.

● Pool panels in detached buildings

A reply to the following question has been requested. Is a feeder to a swimming pool panel in a detached building required to have an insulated equipment grounding conductor installed in a raceway as per NEC 680-25(d)?

The 1998 National Electrical Code Committee Report on Proposals and Report on Comments (for the 1999 NEC) publications have revised Article 680-25(d). The latest revision from the ROC (comment 20-130) explains the intention of the code panel and reads as follows:

"680-25(d) Panelboards. A panelboard and, where installed, a disconnecting means, that are not part of the service equipment or source of a separately derived system, shall have an equipment grounding conductor installed between its grounding terminal and the grounding terminal of the applicable service equipment or source of a separately derived system. This conductor shall be sized in accordance with Table 250-122 but not smaller than No. 12. On separately derived systems, this conductor shall be sized in accordance with Table 250-66 but not smaller than No. 8. It shall be an insulated conductor and shall be installed with the feeder conductors in rigid metal conduit, intermediate metal conduit, liquidtight flexible nonmetallic conduit, or rigid nonmetallic conduit. Electrical metallic tubing shall be permitted to be used to protect conductors where installed on or within the building in accordance with Article 344. Electrical nonmetallic tubing shall be permitted to be used to enclose the conductors where installed within the building in accordance with Article 344. The equipment grounding conductor shall be connected to an equipment grounding terminal of the panelboard and, where installed, to the enclosure for a disconnecting means.

(1) Where the equipment grounding conductor between an existing remote panelboard and the service equipment is connected by means of a flexible metal conduit or an approved cable assembly with an insulated or covered equipment grounding conductor, the conduits listed above shall not be required.

(2) A panelboard at a separate building shall be permitted to supply swimming pool equipment if the feeder meets the requirements for grounding in Section 250-32. Where installed, an equipment grounding conductor shall be an insulated conductor."

It should be noted that the reference to NEC 250-32 in section (2) above is for the re-numbered article 250 in the 1999 NEC. This section was numbered NEC 250-24 in the 1996 code. Also, section 250-32 (1999 NEC) will require an equipment grounding conductor in the feeder when there are any continuous metallic paths between both buildings.

Where NEC 250-24 (1996 NEC) allows a feeder without an equipment grounding conductor, an insulated equipment grounding conductor in raceway to a swimming pool panel is not required. However, if an equipment grounding conductor is installed between the service and a swimming pool panel in a detached building it must be insulated and installed according to the wiring method requirements of NEC 680-25(d).

● Electrical permits purchased marked "ready now"

As the result of an audit, the "ready now" box at the top of the Electrical Work Permit Application form was removed. The auditors determined that if "ready now" was marked the applicant was in violation of WAC 296-46-495(2). This rule requires electrical work permits be obtained prior to beginning installations or alterations. Customer service personnel were instructed not to process these permits.

When purchasing an electrical permit, it is acceptable to note a future date when the permit will be ready, but permits cannot be marked "ready now".

● Panelboards installed in stairwells

Panelboards may be installed in stairwells provided they are in compliance with all applicable requirements of the NEC and WAC 296-46. There is no specific requirement for a level working platform, however proper working clearances (NEC 110-16) and maximum disconnect height (NEC 380-8) must be complied with. It is possible that the installation could be judged to be unsafe by the inspector due to a steep pitch of the stairway or other site conditions. Questionable installations should be discussed with the local inspector prior to beginning the work.

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 7** **July 1998**

Our 7th month! Electrical code issues and answers.

● Equipment ground required in flex when installation requires flexibility

NEC 250-91(b) and the exceptions allow the use of flexible metal conduit for grounding when both the conduit and the fittings are listed for grounding and the total ground return path does not exceed 6 ft. (1.83m). NEC 350-14 and NEC 351-9 require that: *"Where used to connect equipment where flexibility is required, an equipment grounding conductor shall be installed."* Therefore, anytime flexible metal conduit or liquid tight flexible metal conduit is installed in any length to provide flexibility such as to supply motors and adjustable equipment an equipment grounding conductor must be installed.

● WAC 296-46-23040(4) - Additional service laterals to multiple-occupancy buildings

Recently an interpretation was requested for WAC 296-36-23040(4)(b) - accepting multiple service laterals for multiple-occupancy buildings. This WAC allows the department to accept additional service laterals if conditions (a) through (e) are met. Condition (b) states that *"each service lateral terminates in service equipment that is located in or on a unit served by the service equipment."* The question of interpretation is whether a service lateral is allowed to "terminate" in a meter base or CT can. The service entrance conductors would then terminate in the "service equipment" that is located in or on the unit.

What have we done in the past? A polling of the supervisors shows that our interpretation and enforcement of this rule has been inconsistent. Some regions have allowed additional service laterals to terminate in a meter or CT enclosure on the inside or outside of the building. Others have required a combination meter base and main breaker on the outside or inside of the building.

What is unsafe about terminating in a meter base or CT enclosure in this situation? A single service lateral is allowed to terminate in a meter base or CT can. We approve these installations all of the time. Even the exception to WAC 296-46-23040(4) allows the service laterals to terminate in *"meter enclosures that are permitted to be less than 15 feet apart"* for duplexes.

Many inspectors have used the 1996 code revision to NEC 230-66 as the basis for a decision on WAC 296-46-23040(4). The revision states that *"Individual meter socket enclosures shall not be considered service equipment."* This change was **not** made to exclude metering equipment from the termination of service laterals or service entrance conductors or otherwise prohibit the use of such equipment in services. The NEC Technical Correlating Committee added this statement to NEC 230-66, to comply with the Manual of Style, when the Fine Print Note (FPN) to NEC 230-83 was removed. The old FPN stated *"It is not the intent of this section to require individual meter socket enclosures to be suitable for use as service equipment."* The revision to NEC 230-66 dealt with the **marking** of meter equipment, not the use.

What is safe and what makes sense? The responsibility of the Chief Electrical Inspector is to interpret standards, rules, and policies to provide consistency for our program. The interpretation of this section will be that the department will accept additional service laterals if conditions (a) through (e) are met. For condition (b) service laterals may terminate in a listed meter enclosure or CT can. The service entrance conductors must then terminate in listed service equipment. This interpretation is effective immediately. WAC 296-46-23040 will be revised to reflect this interpretation in our next WAC revision cycle.

● Conduit, cables, or nonmetallic underground conduit with conductors (NEC 343) installed with a trenching machine

The same inspection rules we apply to ditch cover would apply to this installation method as well. RCW 19.28.210(4) requires that *"No electrical wiring or equipment subject to this chapter may be concealed until it has been approved by the inspector making the inspection."* Electrical conduit and wiring cannot be covered until visually inspected by an electrical inspector. Since the material is being installed to a required depth and <u>covered at the same time</u>, other arrangements will be necessary. The inspector will be called to observe the process at the

outset and then check the process as often as he or she deems necessary to insure that the installation is meeting the intent of the code. Just because the machine has the capability to place and cover at the same time does not mean the installation can be done without inspection approval. In all cases, the field inspector has discretion to allow partial cover of buried raceways and conductors for safety reasons.

The installation of conduit and/or wiring, whether done with a machine or not, must be performed by a certified electrician. If a machine is laying conduit or conductors, a certified electrician must be continuously present and directly involved in the installation. The Electrical Board has consistently made the decision that electrical conduit or conductors require a certified electrician to do the installation. If an individual was only **digging** the ditch he/she would not have to be a certified electrician.

● Wiring methods in medical, dental or chiropractic offices or clinics, outpatient or ambulatory surgical clinics, and other such health care occupancies.

Although many of these health care facilities do not require plan review, portions of them are likely to require the special wiring methods of NEC Article 517. Patient Care Areas are defined as *"Any portion of a health care facility wherein patients are intended to be examined or treated. Areas of a health care facility in which patient care is administered are classified as general care areas, critical care areas, either of which may be classified as a wet location."* All of the above occupancies are likely to contain general care areas which *"are patient bedrooms, examining rooms, treatment rooms, clinics, and similar areas in which it is intended that the patient shall come in contact with ordinary appliances such as a nurse call system, electrical beds, examining lamps, telephone, and entertainment devices. In such areas, it may also be intended that patients be connected to electromedical devices (such as heating pads, electrocardiographs, drainage pumps, monitors, otoscopes, opthalmoscopes, intravenous lines, etc.)"*

NEC 517-13 requires an <u>insulated</u> <u>copper</u> conductor to ground receptacles and fixed equipment in patient care areas. This insulated grounding conductor (and the branch-circuit conductors) must be installed in a <u>metal</u> raceway or, by exception, in types MI, MC, or AC cables. If such cables are used, the outer metal armor or sheath must be identified as an acceptable ground return path. For metal-clad cable (MC) or armored cable (AC) this identification is "Hospital Grade." Flexible metal conduit in lengths exceeding six feet of total ground return path does not meet the requirement for metal raceway. See NEC 517-13(a&b) for additional details on these and other branch-circuits in patient care areas.

● Mobile home feeder wiring method requirements

NEC 550-24 requires that four insulated and color coded conductors of adequate ampacity be installed to feed a mobile home. It further states that the equipment grounding conductor cannot be identified by stripping the insulation from the conductor.

All applicable requirements found in Chapter 3 must be complied with when installing a feeder to a mobile home. These requirements include but are not limited to: proper depth of direct burial conductors and physical protection of conductors to that depth, conductors and raceways must be a type approved for the application, and any raceways installed must meet all installation requirements for supporting and securing.

● New fees for swimming pools, hot tubs, spas, and septic pumping systems

The statutory authority of the electrical inspection program includes the requirement that permit fees cover the entire cost of performing electrical inspections. We have added new inspection fees for specialty electrical items (swimming pools, hot tubs, spas, saunas, and septic pumping systems) that require additional inspection time or inspection trips to a job site.

The fee schedule lists different fees for these specialty items inspected *"with the service"*, and *"at the same time"* as the service. The reduced fees will be applicable when the inspection items are indicated and paid for on the same permit as the rest of the building wiring. If paid for at the lower rate, it is intended that swimming pools, hot tubs, spas, saunas, and septic pumping systems can be inspected during the normal number of progress inspections allowed for the permit. If there is no other work except a specialty item or, an additional trip is required specifically for a specialty item, it will be charged at the greater fee. Specialty items that are not included when purchasing the original electrical permit will also be charged at the greater fee.

Electrical Section Internet Address: **www.wa.gov/lni/electrical**

Department of LABOR AND INDUSTRIES

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Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 6** **June 1998**

Our 6th month! Electrical code issues and answers.

● Temporary outdoor stage or concert productions

Production companies in the business of providing temporary portable electrical distribution equipment to power outdoor productions of concerts, stage shows, and similar shows are allowed to purchase electrical work permits for outdoor temporary installations of electrical generators and portable electrical distribution equipment and conductors that they own or exclusively control (lease, or rent). Qualified, regularly employed employees of the firm must do installations of this equipment. Electrical inspection and approval is required before the event opens.

The department will consider the portable temporary equipment owned by these firms as their "place of business" or "business property," as we have similarly considered carnivals and amusement rides in past practice. The electrical work permit fees will be calculated per WAC 296-46-910(3)-TEMPORARY SERVICES.

Temporary electrical installations in buildings or permanent structures, and the connection of temporary outdoor portable electrical distribution equipment to permanent wiring, must be done by properly certified electricians and licensed electrical contractors or by the real property owners exempted in RCW 19.28.610. An electrical work permit is required from each entity responsible for their portion of the electrical work.

● Amusement Ride Inspections

Amusement ride companies are required to have each amusement ride or structure inspected for mechanical safety at least once annually by an insurer or a person with whom the insurer has contracted. Each ride or structure must also have an annual electrical inspection performed by the Department of Labor and Industries. Additionally, the electrical inspector shall monitor at each location where an amusement ride or structure is set up for operation, that the Operating Permit (safety) decal and a carnival electrical inspection decal have been obtained and that the ride description, model number and serial number are properly identified.

Prior to each electrical inspection the inspector will contact Brandi O'Shurak, (360) 902-6216 and obtain a list of the current rides registered with the department. If there are any changes or additions to this list of rides they should be noted. The inspector will, after completing each electrical inspection fax a copy of the list along with any correction reports to Ms. O'Shurak at FAX (360) 902-5296.

Upon completion of the first electrical inspection of the season for each ride or structure the electrical inspector will place a carnival electrical inspection decal at the ride or structure disconnecting means, at each distribution panel (splitter box), and at each generator to indicate that the initial inspection was made for that calendar year.

The electrical inspector will inspect the electrical power generation and distribution system for compliance with the National Electrical Code each time the ride or structure is set up for operation. A standard approval sticker will be posted at each generator or other power source.

● Use of “J” type Cam Loc connectors for carnivals and stage shows

Listed, locking type, single-pole portable cable connectors, such as “J” type Cam-Lok connectors, are now permitted to be used on single conductor cables in sizes #2 and larger. The use of these connectors must comply with at least one of the following: 1) The connectors are interlocked so that it is not possible to connect or disconnect conductors while energized, 2) The line connectors are of the listed sequential-interlocking type or, 3) A caution notice shall be adjacent to the connectors showing the proper connection and disconnection sequence. Additional requirements for these connections are in WAC 296-46-360 & 365, NEC 520-53(k), NEC 525-15(d), and NEC 530-22.

● New Nonresidential lighting maintenance and lighting retrofit specialty category

What is the new specialty? A new specialty category for an electrical contractor license, administrator certificate in WAC 296-46-930 and a technician certificate in WAC 296-401-140 is created and becomes effective June 30, 1998.

What does it cover? This specialty limits the holder to working within the housing of existing nonresidential lighting fixtures for work related to repair, service, and maintenance of lighting fixtures, and the installation of energy efficient lighting retrofit upgrades. The holder is not allowed to install new fixtures or branch circuits, to relocate existing fixtures, or to alter existing branch circuits.

How do I qualify for the technician certificate? A one-year window exists for people with prior experience to apply to take the specialty examination. Prior to June 30, 1999, you may be eligible to take the technician examination by submitting a signed and notarized letter from an employer(s) verifying that you "performed electrical lighting maintenance and lighting retrofit installations and were employed for a minimum of two years by a contractor engaged full-time in the business of nonresidential lighting maintenance and lighting retrofit work."

An employer who verifies work experience for an employee must show proof that the employer was a registered contractor under RCW 18.27 or proof of a business license issued by the department of Licensing for the time period of experience certified.

After submittal and verification of a department application, letter of experience, and payment of the appropriate fee, individuals will be allowed to take the examination. A certificate will be issued after an applicant passes the examination. All individuals that submit applications prior to June 30, 1999 and qualify to take the examination will remain qualified after that date.

After June 30, 1999, all applicants must show at least two years (4000 hours) of experience as a certified trainee performing work in this category under the direct supervision of a journeyman, nonresidential maintenance, or lighting specialty electrician. This specialty as well as all journeymen and other specialty electricians must complete the required continuing education courses prior to renewal of their certificates.

How do I obtain this new specialty administrator certificate? You must complete the department's application to take the specialty administrator examination based on the scope of work, pay the proper fee, and pass the examination.

How do I obtain this new specialty electrical contractor license? A detailed explanation for obtaining a contractor license is provided in RCW 19.28.120. A specialty contractor must employ a full-time specialty administrator prior to being issued an electrical contractor license.

For further information about this specialty or any other certificates and licenses please contact Phyllis Cooper at (360) 902-5252 or write to the Electrical Licensing and Certification Section at PO Box 44460, Olympia, WA 98504-4460.

● White conductor in Type NM cable must be re-identified when used as ungrounded (hot) conductor

NEC 310-12(c) states: *Conductors that are intended for use as ungrounded* (hot) *conductors, whether used as single conductors or in multiconductor cables, shall be finished to be clearly distinguishable from grounded and grounding conductors. Ungrounded conductors shall be distinguished by colors other than white, natural gray, or green; or by a combination of color plus distinguishing markings.* The exception refers to NEC 200-7 which states: *A continuous white or natural gray covering on a conductor or a termination marking of white or natural gray color shall be used only for the grounded* (neutral) *conductor*. Exception No. 1 requires that if the white wire is used as an ungrounded (hot) conductor in applications such as a 240 volt circuit to a space heater or hot water tank, that it be permanently re-identified to indicate its use, by painting or other effective means at its termination and at each location where the conductor is visible and accessible. Exception No. 2 allows the white wire to supply single pole and three-way switches, without re-identification.

It should be noted that the 1998 NEC Committee Report on Proposals drops the last sentence of NEC 200-7 exception No. 2 and will require reidentification of white conductors when used as a switch loop.

Department of LABOR AND INDUSTRIES

ELECTRICAL CURRENTS

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Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 5** **May 1998**

Our 5th month! Electrical code issues and answers.

● Wiring modular office furnishings or relocatable wired partitions

When manufactured office partitions contain an electrical distribution system (including switches, receptacles, flexible cable assemblies with quick-connect electrical interconnections, and branch circuit conductors to the premises wiring), all electrical equipment and conductors must be installed by properly certified electricians and licensed electrical contractors. Uncertified individuals may assemble the panels, work surfaces, cabinets, shelves, and structural elements of the partitions.

Electrical inspection and permit fees for added, altered, or extended office furnishing circuit installations will be based on WAC 296-46-910(2)(c) along with the note. (Currently, the first five circuits per panel at $52; plus $5 for each additional circuit; not to exceed the cost of a new feeder to a panel of equivalent rating.)

● Overcurrent protection for transformer installations

There are always two issues to be considered when sizing overcurrent protection for transformer installations: overcurrent protection for the transformer and overcurrent protection for the primary and secondary conductors. Transformer protection is addressed in NEC 450-3 and conductor protection is covered by NEC 240-3. Both must be properly protected.

NEC 450-3 will allow a transformer to be protected by an overcurrent device that exceeds the rated full load amps of the transformer. However, the primary and secondary circuit conductors must be protected at a value no greater than allowed by NEC 240-3. Where more than one calculated ampacity could apply to conductors and equipment, the lowest value shall be used.

● Transformer taps NEC 240-21(d)

When using the tap rule for transformers in NEC 240-21(d) [Primary Plus Secondary Not Over 25 Feet], it is permissible to exclude from the 25 foot measurement any portion of the primary conductors that are protected at their allowable ampacity. This exclusion can be applied to transformer primary conductors that are tapped from a feeder, such as a radial loop feeder, or originate directly from an overcurrent device. This would allow the entire 25 feet to be measured from the load terminals of the transformer to the secondary overcurrent protection if the overcurrent device is a single circuit breaker or set of fuses that limit load current to not more than the conductor ampacity. Additionally, all of the conditions (1) through (5) in NEC 240-21(d) must be met.

● Electrical wiring in conduit on or below grade

All conduit installed underground or in concrete on or below grade is classified as a wet location as defined in Article 100 of the National Electrical Code. Any wiring method used under these conditions must be a type that is approved for a wet location. This prohibits the use of type NM cable and other wiring approved for use in normally dry locations only.

● Electrical inspection of prefabricated buildings classified by an accredited electrical product testing laboratory

The department retains the right to do the electrical inspections of prefabricated buildings (factory-assembled structures) that will be sited in Washington. These buildings must comply with the requirements of RCW 19.28, Electricians and Electrical Installations; WAC 296-46, Safety Standards-Installing Electric Wires and Equipment-Administrative Rules; NFPA 70, The National Electrical Code; and when the structures are of "closed construction" with WAC 296-150F, Factory-built Housing and Commercial Structures.

Classification and labeling of a factory-assembled structure by an electrical products testing laboratory is not a substitute for field electrical inspection. An electrical work permit must be purchased and an electrical inspection is required to insure compliance with all of the appropriate standards listed above. The electrical contractor

purchasing the permit will be responsible for the installation of all of the electrical equipment. Permit fees will be based upon the number of services, feeders, and circuits installed per WAC 296-46-910.

● Gaps around boxes - NEC 370-20 and 370 21

Boxes are permitted to be set back no more than ¼ in. (635mm) in walls and ceilings of concrete, tile, or other noncombustible material. In walls or ceilings constructed of wood or other combustible materials, the box must be flush with or project from the finished surface of the wall. Boxes that recess, so that the cover for the box does not fit against the face of the box in noncombustible material must also provide no more than a 1/8 in (318mm) gap at the edge of the box.

● Grounding manhole, vault, or handhole covers

Metal covers installed on concrete manholes, vaults, or handholes that contain electrical conductors or equipment must be grounded to ensure electrical continuity and the capacity to conduct safely any fault current likely to be imposed. Metal covers on any nonmetallic box require a bonding jumper to assure proper grounding of the cover. NEC 370-28(c) requires that covers on boxes meet the grounding requirements of NEC 250-42.

● Bonding jumpers for raised cover devices

NEC 250-74 states: *"An equipment bonding jumper shall be used to connect the grounding terminal of a grounding-type receptacle to a grounded box."* Article 410-56(i) requires that receptacles be secured to a raised cover with more than one screw. Two-screw attachment does not satisfy equipment grounding requirements for the receptacle installed in the raised cover, unless the cover and box combination are clearly identified as listed for equipment grounding. The department is unaware of any raised cover/box combinations identified in this manner; therefore, bonding jumpers from a raised cover supported receptacle to a metal box will be required.

At the present time there are no similar requirements for switches mounted in raised covers. Switches are not devices that are relied upon to provide an equipment grounding path for downstream equipment. NEC 380-12 requires that metal faceplates be effectively grounded. Raised covers that support switches will be considered effectively grounded when properly secured to a grounded metal box with the provided mounting screws.

It should be noted that the 1998 NEC Committee Report on Proposals included a requirement that *"snap switches, including dimmer switches, shall be effectively grounded and shall provide a means to ground metal faceplates, whether or not a metal faceplate is installed."* An equipment grounding terminal on a snap switch and a bonding jumper to a metal box will be required by the 1999 NEC if this proposal survives the NFPA 1998 general meeting.

● Ground Rods

NEC 250-83 (c) (3) requires that ground rods *"be driven to a depth of not less than 8 feet (2.44m) except that, where rock bottom is encountered, the electrode shall be driven at an oblique angle not to exceed 45 degrees from the vertical or shall be buried in a trench that is at least 2 ½ ft. (762mm) deep."*

<u>The requirement is that the rod be driven to a depth of 8 feet</u>. If the rod <u>cannot</u> be <u>driven</u> then there is a choice of either driving it at a 45-degree angle or laying it in a trench that is no less than 2 ½ feet deep.

● Two or more services installed for capacity requirements in excess of 2000 amps

NEC 230-2(a) Exception No.4 permits two or more services *"where the capacity requirements are in excess of 2000 amperes at a supply voltage of 600 volts or less."* NEC 230-71(a) states *"There shall be no more than six disconnects <u>per</u> <u>service</u> grouped in any one location."* There is no requirement for "grouping" the additional service(s) together. These services are required to be located in compliance with WAC 296-46-23040 and permitted to be located where necessary to serve the loads. NEC 230-2(b) requires that *"a permanent plaque or directory shall be installed at each service disconnect location denoting all other services, feeders, and branch circuits supplying that building or structure and the area served by each."*

● Electrical section website is a source of information for our stakeholders

RCW 19.28-Electricians and Electrical Installations, WAC 296-46-Safety Standards-Installing Electric Wires and Equipment-Administrative Rules, WAC 296-401-Certification of Competency for Journeyman Electricians, a summary of the most recent proposed WAC rules and fee changes, and all the back issues of this publication are available at the website. Future plans include adding Plan Review Guidelines and Electrical Section Policies.

Electrical Section Internet Address: **www.wa.gov/lni/electrical**

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 4** **April 1998**

Our 4th month! Electrical code issues and answers.

● Public hearings for proposed changes to WAC 296-46 and 296-401 will be held:

April 23, 1998 1:30 PM
Spokane Public Works Building
Co. Commissioners Assembly Room (Lower Level)
1026 West Broadway, Spokane

April 24, 1998 1:30 PM
Department of Labor and Industries Building
Auditorium
7273 Linderson Way, Tumwater

The proposed amendments increase existing fees by 4.05%; establish new fees for new services rendered or for services previously performed without charge; increase certain existing civil penalties and establish a new one in order to strengthen the department's compliance efforts; add technical changes; and clarify existing rule sections. The tentative adoption date for these rules is May 29, 1998 and the tentative effective date is June 30, 1998.

Copies of the proposed rule changes are available upon request by calling (360) 902-5259; or by written request to the Department of Labor and Industries, Attention: Janet Lewis, Chief Electrical Inspector, P.O. Box 44460, Olympia, WA 98504-4460. Additional details and other electrical program information is available on our Internet home page at:

http://www.wa.gov/lni/electrical

● Listed plastic floor boxes

There are now listed floor boxes available constructed of plastic. These listed boxes and their listed nonmetallic covers are acceptable in any application where nonmetallic boxes and wiring methods are permitted. The use of these boxes is not prohibited by WAC 296-46-21052, which allows the use of unlisted formed or welded metal boxes, substantially supported, in out of traffic areas of dwelling units. This rule was adopted when there were few listed floor boxes available, most were intended for concrete slab applications, and all were quite expensive. The industry now has several inexpensive listed floor boxes available for many applications and WAC 296-46-21052 has outlived its usefulness. A proposal to remove this rule from the WAC and require compliance with NEC 370-27(b) or its exception is a part of the current rule package.

● Field evaluation of unlisted amusement rides

As a result of winter meetings with representatives of the carnival industry, the department agreed to allow unlisted rides of foreign manufacture to be field evaluated for electrical safety. Evaluations must be done by electrical testing laboratories accredited by the department to do field evaluations to the appropriate and applicable standards (ANSI/UL 508, etc.). Normally field evaluations are site-specific and must be redone when equipment is relocated. However, since the power supplies, feeders, and distribution equipment travel with the ride, the field evaluation labels will be acceptable when the ride is moved.

● Conduit entries into outdoor enclosures

The preferred method to enter the top of a NEMA 3R "Rainproof" enclosure is through a factory-installed hub or through factory-punched holes fitted with the proper accessory hub. Unused factory hubs or holes must be sealed with the manufacturer's proper weatherproof blank or plug. Any entries into the top of an outdoor enclosure that are punched or drilled in the field must utilize listed hubs or listed sealing locknuts that are suitable for the wet environment. These requirements apply to entries into the sides or back of NEMA 3R enclosures whenever the holes are adjacent to or above live parts. No special sealing is required below live parts or on the bottom of the enclosure.

Proper workmanship is essential in this field work. Electrical inspectors will not approve such fittings or connections that have oversized, warped, or eccentric holes, damage to the corrosion protection of the enclosure, or any other conditions of installation that would adversely effect the weatherproof integrity or durability of the conduit entry.

● Grouping of disconnecting means in an electrical room (NEC 230-72 and NEC 225-8)

The term "grouped" is not specifically defined in the NEC. There is no requirement for the maximum distance allowed between disconnects nor a requirement that disconnects be adjacent to one another. Past department practice to determine when disconnects are "grouped" has been dependent on the specifics of each installation.

The department recommends and prefers that service disconnects, in separate enclosures, be mounted adjacent to one another whenever practicable. However, the department has allowed separate disconnect enclosures to be mounted on adjacent or opposite walls in the same electrical room, when the disconnects are visible from one another or all are visible from a central location, and when each is clearly marked. The department does not require disconnects to be within a specific distance of each other, but it prefers that they be as near as practicable to each other.

The intention of grouping service (or building) disconnects is to allow personnel to shut down the premises wiring quickly and without confusion in case of an emergency. Enclosures that are adjacent and clearly identified are the best way to meet this intention. If you have special construction circumstances that you feel will not allow this type of installation, present your proposed alternative design to the electrical inspector or electrical inspection field supervisor before the equipment is installed.

● Guidelines for acceptable wiring methods in non-conventional building construction

Innovative construction systems are being used in all areas of the state. New systems include poured-in-place concrete walls formed and insulated by expanded polystyrene panels which remain on the interior and exterior surfaces of the walls; foam-core OSB or plywood sheathed interlocking building panels; and buildings where the primary wall construction materials are compressed straw.

Conduit wiring systems are suitable for these types of construction. However, raceway systems must be inspected prior to concealment. Our electrical installation laws require that certified (01) journeymen electricians, with trainees in a maximum one-to one ratio, must install residential conduit systems.

Nonmetallic-sheathed cable wiring methods can be used in these types of construction, but normal bored holes in framing members installation methods are not applicable. The following general installation guidelines will be applied to NM cable wiring in these unconventional structures:

All boxes must be rigidly supported from a structural member of the building by securing to concrete or using a metal, approved polymeric, or wood brace as described in NEC 370-23. Mechanical fasteners, such as bolts or studs, must minimize space taken up within a box. Inspectors will not approve glue or spray foam adhesive to secure boxes. The installer must insure that the location of boxes in walls or ceilings complies with NEC 370-20.

Nonmetallic-sheathed cables may be set in routed grooves or slots, or voids precast within the foam materials. NEC 300-4(e) states that *"Cable- or raceway-type wiring methods installed in a (shallow) groove, to be covered by wallboard, siding, paneling, carpeting, or similar finish, shall be protected by $^{1}/_{16}$ in. (1.59 mm) thick steel plate, sleeve, or equivalent or by not less that 1¼-in. (31.8 mm) free space for the full length of the groove in which the cable or raceway is installed."*

The department will allow daubs of spray foam adhesive placed in the groove to secure NM cables in place at intervals not to exceed 4½ ft and within 12 in. from every cabinet, box, or fitting. Cables must be left visible for inspection; additional foam can be added after cover is approved. Spray foam adhesive/insulation must be a type approved for use with type NM cable.

● City of Burien electrical inspections

Burien is the latest city to establish their own electrical inspection authority. The city has also elected to exercise its right under the Interlocal Cooperation Act to contract with another jurisdiction to perform inspections. Burien is contracting with the City of Sea-Tac for inspection services. As of April 3, 1998 we will no longer sell new permits for electrical inspections within the City of Burien. We will complete any projects on permits sold prior to this date.

● Trainee cards required to accumulate hours of experience

You cannot accumulate hours toward journeyman or specialty electrician experience unless you have a training certificate in your possession. Your training certificate must be renewed annually. An individual that has a valid specialty electrician certificate must also have a current training certificate in order to record hours of experience toward an additional specialty or toward journeyman certification.

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 3** **March 1998**

Our 3rd month! Electrical code issues and answers.

● Working clearances for transformers

For the purpose of determining access and working space about transformers, they shall not be required to be considered as *"equipment likely to require examination, adjustment, servicing, or maintenance while energized"*. What is the minimum working clearance? We will not attempt to set an arbitrary distance as a minimum. Adequate clearance to access, repair, or service transformer conductor terminations or taps will be subject to the judgement of the electrical inspector and be based upon transformer size and location and conductor size and location.

If you have any doubt, working clearances in compliance with NEC 110-16, 110-32, and 110-34 will always be considered adequate; otherwise check with your electrical inspector. Transformers shall not be permitted to infringe into the working space required about other equipment or into the dedicated spaces described in NEC 384-4.

● Single conductors installed in cable trays

NEC 318-3(b)(1) states that single conductors installed in cable trays shall be No. 1/0 or larger and shall be of a type listed and marked on the surface for use in cable trays. Where exposed to the direct rays of the sun, cables shall be marked as being sunlight resistant. Single conductors used as equipment grounding conductors are not required to be of a type marked for cable tray use. However, they must be No. 4 or larger and are permitted to be insulated, covered, or bare.

● Receptacles in dwelling unit laundry rooms and laundry areas

In dwelling units at least one receptacle outlet is required to be installed for the laundry. NEC 210-52(f) allows exceptions to the required outlet for apartment buildings where laundry facilities are provided and accessible to all occupants and for apartment buildings where laundry facilities are not to be installed or permitted.

NEC 220-4 requires at least one *"20-ampere branch circuit shall be provided to supply the laundry receptacle outlet(s)"* and the *"circuit shall have no other outlets."* The outlets are not restricted to supplying only a clothes washing machine. Other receptacles in the laundry room (or area) on the required circuit may be used to serve ironing or other cord-and-plug connected laundry equipment. The total load on a laundry branch circuit must comply with NEC 210-23(a), and for the purposes of this article, clothes washing machines and gas dryers shall be considered as *"utilization equipment fastened in place"* and not as portable equipment. If of proper ratings, a washing machine and gas dryer could be supplied by the same laundry branch circuit. However, it is unlikely that their combined load would be 50 percent (10 amps) or less of the branch circuit rating and permit any additional laundry area receptacles on the same circuit.

● Disconnecting means requirements for outside branch circuits and feeders between buildings or structures (includes generators installed outside buildings)

NEC 225-8(b) states *"Where more than one building or other structure is on the same property and under single management, each building or other structure served shall be provided with means for disconnecting all ungrounded conductors. The disconnecting means shall be installed inside or outside of the building or structure served at a readily accessible location nearest the point of entrance of the supply conductors."* WAC 296-46-225 further defines "nearest the point of entrance" by stating that *"the branch circuit or feeder raceway or cable shall extend no more that 15 feet inside a building or structure."* (Exceptions for large industrial multibuilding complexes, integrated electrical systems in specific industrial environments, and poles used as lighting standards can be found in NEC 225-8(b).)

Additionally, the disconnecting means specified in NEC 225-8(b) *"shall be suitable for use as service equipment."* This requirement is not intended to imply that the building disconnecting means must be installed as a service. The "suitable for use as service equipment" rating insures that the disconnect enclosure or panel has the built-in

capability of accepting a main bonding jumper to bond the system grounded circuit conductor (neutral) to the equipment grounds and equipment enclosure. If permitted in NEC 250-24, the electrical designer or installer has the option of installing a main bonding jumper at the served building depending upon whether an equipment grounding conductor is run with the feeder conductors.

● Sign transformer secondary circuit ground-fault protection per NEC 600-23

Although NEC 600-23(b) states that *"Transformers and electronic power supplies shall have secondary ground-fault protection,"* the code requirement preceded the neon transformer and power supply manufacturing industry's ability to supply a product that complies. Only one listed transformer is available for skeletal tube neon installations at this time, and a second manufacturer is estimating that their product will not be in full production until April or May of this year. In order to cooperate with the electrical distributors and the sign manufacturing and installation industry, the department will not enforce NEC 600-23(b) until January 1, 1999. This should give the industry adequate time to distribute the new equipment and clear existing supplies of transformers and power supplies from the distribution pipeline.

Underwriters Laboratories has not completed the process of adding secondary circuit ground-fault protection to the UL48 standard (Electric Signs). There is a moratorium on the implementation of NEC 600-23(b) requirements in signs now being manufactured and listed. Electrical inspectors will not require that factory-installed sign transformers and power supplies be replaced with units having secondary ground-fault protection. If signs are listed by an electrical products testing laboratory accredited by the department, then factory-installed internal wiring and equipment meeting UL48 will only be inspected in the field for physical damage.

● Additional information on equipotential planes in agricultural buildings

NEC section 547-8(b) now requires that an equipotential plane be created in concrete floors in animal confinement areas that have electrical equipment or other equipment that is directly connected to the electrical grounding system. **A wire mesh or other conductive elements (reinforcing rods) must be installed in the concrete** and bonded to all adjacent conductive equipment, structures, or surfaces, and this potential plane must be bonded to the grounding electrode system for the building. The bonding conductor must be copper, not smaller than AWG No. 8, utilizing connectors (and associated screws and bolts) of brass, copper, or copper alloy. Before concrete is poured for floors in such livestock buildings, an electrical inspection is required to verify that the proper electrical bonding is in place.

Equipotential planes are necessary in "animal confinement areas" where the livestock are exposed to more than one electrically conductive element, including things like watering units, feeders, metal partitions or stalls, or milking equipment. In such areas the potential for "stray" currents would exist if all of the conductive surfaces were not bonded together. Additionally, a "voltage gradient or voltage ramp" is necessary at entrances and exits to the equipotential plane to reduce the potential for an animal to receive a shock as it steps onto or off the plane. The voltage differential cannot be totally eliminated, but it can be reduced to acceptable levels.

In cases where additions to animal confinement areas are constructed adjacent to existing concrete floors without conductive elements installed, there are two practical methods to retrofit the existing floors with equipotential systems. A conductive mesh can be installed with a poured concrete overlay on the existing floor, or it is possible to grout copper conductors in concrete saw cuts to establish an equipotential plane.

The construction details of new or retrofit installations of equipotential planes or voltage gradients are far beyond the scope of this newsletter. A fine print note to NEC 547-8(b) references:

> *Equipotential Planes in Animal Containment Areas*, American Society of Agricultural Engineers (ASAE) EP473-1994.
> ASAE, 2950 Niles Road, St. Joseph, MI 49085-9659
> (616) 429-0300, Fax: (616) 429-3852, http://asae.org/

The department has also been made aware of another publication:

> *Stray Voltage: Guide to Equipotential Plane Installation*, National Rural Electric Cooperative Association, Rural Electric Research, Project Report 86-B, $5
> NRECA-RER Publications, 1800 Massachusetts Avenue NW, FA-10, Washington, DC 20036
> (202) 857-4845, http://www.epri.com/NRECA/

New Electrical Section Internet Address: www.wa.gov/lni/electrical

Department of Labor and Industries

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 2** **February 1998**

Our 2nd month! Electrical code issues and answers.

● Closed circuit cable TV security cameras integrated with control circuits.

We have not required inspection or licensing for the installation of coaxial cable in commercial cable television or closed circuit cable television systems, since RCW 19.28.010 exempts *"television wires and equipment, and television antenna installations, signal strength amplifiers, and coaxial installations pertaining thereto."* However, the integration of line voltage or limited energy controls for cameras and equipment into closed circuit coaxial cable television systems is not exempt. Such systems are security systems and require electrical work permits and inspection, contractor licensing, and electrician certification in the general electrical or limited energy specialty electrical categories.

● Access handholes in metal poles supporting light fixtures and signs

Metal poles supporting lighting fixtures <u>or signs</u> shall have a minimum 2" x 4" accessible handhole in the pole to provide access for raceway bonding and equipment grounding terminations and to facilitate installation or replacement of the conductors within the pole. The specific requirements and installation details can be found in NEC 410-15(b) and NEC 600-5(c)(3).

● Article NEC 300-11 and WAC 296-46-30001 – Raceways supported by wires

The code does not prohibit the installation of conduit on wires installed in addition to, and independent of, the ceiling support wires. Where independent support wires are used, they shall meet all of the requirements of WAC 296-46-30001 (Exception: Number 12 wire will be permitted as the minimum size wire to support raceways while a WAC change to that effect is being processed). If raceways in compliance with WAC 296-46-30001 are intended to be installed <u>on wires required for supporting the ceiling assembly</u>, then the contractor should present to the inspector the ceiling manufacturer's installation instructions permitting the additional weight of the raceways, conductors, and equipment.

● Article NEC 547 – AGRICULTURAL BUILDINGS

There is a need for a practical interpretation of the scope of Article 547. The special conditions of this article are most appropriately applied to large commercial poultry, livestock, and fish <u>confinement systems</u>. Areas that have automated feed handling systems likely to generate and accumulate <u>excessive</u> dust, areas <u>accumulating</u> quantities of animal excrement, and livestock confinement areas that are wet due to <u>constant washing</u> for cleaning and sanitizing represent the conditions that the restrictions of Article 547 are intended to address. Areas with specific conditions that are judged likely to be present should be wired according to the specific sections of Article 547 that apply. It is not necessary to require an equipotential plane in agricultural buildings confining animals not sensitive to small voltage gradients, buildings not subject to wet conditions, or buildings subject to dust accumulation only.

The vast majority of buildings on residential property used to house a few animals, predominantly in conditions of bad weather, would not be subject to the restrictions of Article 547. Conditions such as open ventilation of areas used by animals, small numbers of animals, moderate accumulations of excrement and dust, and frequent cleaning and maintenance of these areas can all be used by the inspector to judge the applicability of Article 547. Inspectors are encouraged to apply NEC 547-2 whenever the conditions of the agricultural use will permit.

● Transformer clearances from combustible surfaces per NEC 450-21.

The general requirement of NEC 450-21(a), for dry-type transformers installed indoors and rated 112½ KVA or less, is a minimum clearance from combustible materials of 12 inches. NEC 450-21(b) requires that individual dry-type transformers installed indoors and rated over 112½ KVA shall be installed in a transformer room of fire-resistant construction. Sections (a) and (b) have exceptions to these requirements and both sections have an Exception No. 2 that includes the qualifying term *"completely enclosed."* This term needs further definition.

Transformers are *"completely enclosed"* when the coils are mounted within a metal enclosure to prevent accidental contact with energized parts. The enclosure may or may not have openings for ventilation near the top and screened or slotted openings on the bottom. (*"Totally enclosed"* transformers have no ventilation openings at all.) Even though completely enclosed transformers can be virtually open on the bottom side, adequate clearance from the coils to combustible surfaces is maintained by design and NEMA construction standards. If a transformer is completely enclosed, then the minimum clearances that must be maintained are for adequate ventilation and heat dissipation. The required clearances must be clearly marked on the transformer.

● Domestic well specialty electrical technician

There is a new specialty electrical contractor's license, administrator's certificate, and specialty electrical technician certificate that have been developed in conjunction with representatives of the well drilling industry. The specialty is specifically limited to the extension of a branch circuit, which is supplied and installed by others, to pump controllers; pressure switches; alarm sensors; and water pumps that do not exceed 7½ horsepower at 230 volts AC single phase for domestic (residential) water systems.

The adoption of this specialty category will not require electrical licensing or certification for those well drilling or pump contractors that only install pumps and conductors **within the well casing**. The new specialty will allow Domestic Well (03A) specialty electrical technicians to perform limited electrical work outside the well casing. This work has previously been restricted to General (01), Residential (02), and Pump and Irrigation (03) contractors and electricians. The installation of services, feeders, branch circuits to feed domestic water systems, and conductors and equipment beyond the scope of the domestic well specialty still requires (01), (02), or (03) electrical licensing and certification.

For applications received prior to December 1, 1998, persons will be eligible to take the domestic well specialty electrical technician examination by submitting to the department a signed and notarized letter from employer(s) stating that they have *"at least four years of prior experience installing domestic water systems, including pump installations, under the supervision of a firm carrying on the business of installing domestic water systems."* Employers must establish appropriate business status by supplying copies of their Water Well Construction Operator's License, RCW 18.27 Contractor's Registration, or Business License for the time period being certified for themselves or their employees. Individuals will be permitted to take the domestic well specialty electrical technician examination after submitting a qualifying application and paying the appropriate examination fees. Specialty electrical technician certificates will be issued upon successful passage of the examination. All individuals that submit applications prior to December 1, 1998, and qualify to take the exam based on those standards, will remain qualified to take the exam after that date.

After December 1, 1998, all applicants must show at least two years (4000 hours per WAC 296-401-100) of experience as a certified trainee installing domestic pump systems under the direct supervision of a domestic well specialty electrical technician, a pump and irrigation specialty electrician, or a journeyman electrician. Labor and Industries' compliance officers and electrical inspectors shall determine that each person doing electrical work on the job site has a proper journeyman, specialty, or trainee certificate per WAC 296-401 sections 120 and 165. Not more than two trainees shall be permitted to work on a job site for every specialty electrical technician, specialty electrician or journeyman electrician working as a specialty electrician.

In order to renew a domestic well specialty electrical technician certificate, the holder must demonstrate evidence of completion of continuing education course(s) of at least eight classroom hours duration per year of the prior certification period. At least eight of those total hours shall be on the current National Electrical Code changes. Continuing education courses with relevant electrical content, approved by the Department of Ecology for renewal of the Washington Water Well Construction Operator's License may be presented and considered by the department for approval.

To obtain a domestic well specialty administrator's certificate, an individual must complete an application for examination furnished by the department, pay the appropriate examination fees, and successfully pass the administrator's examination. A detailed explanation for obtaining an electrical contractor's license (domestic well specialty or other type) is provided in RCW 19.28.120.

If you have further questions about the new specialty certificates or contractors license, you may contact Phyllis Cooper at (360) 902-5252, or Electrical Licensing and Certification at (360) 902-5269, PO Box 44460, Olympia, WA 98504-4460.

Department of LABOR AND INDUSTRIES

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

Janet Lewis, Chief Electrical Inspector **Vol. 1 No. 1** **January 1998**

Electrical code issues and answers.

Communication with inspectors and inspection customers

In response to requests from electricians, electrical contractors, engineers, and our own electrical inspectors we have initiated *"ELECTRICAL CURRENTS"* as a forum for the code interpretations that are requested from the Chief Electrical Inspector. We hope that the publication of this information will result in fewer electrical corrections and improve consistency in the enforcement of the NEC and Electrical Installations Laws of Washington.

Double-throw switches used as transfer switches

Listed double-throw "Enclosed Switches" that have been investigated for switching a common load from a normal supply to an optional standby system are marked "Suitable For Use In Accordance With Article 702 of the National Electrical Code" and acceptable for load transfer use on optional standby systems only. All other approved transfer switches are listed as "Transfer Switches" and marked as suitable for the intended use (such as Service Equipment, Emergency Systems, Optional Standby Systems, Automatic or Non-Automatic Transfer).

Ground-fault circuit interrupters used as switches

There are strap mounted GFCI devices (smooth faced, without slots to accept a male receptacle adapter) available that are listed for use as a "20A-120V General Purpose Switch, 20 Amp Ballast, and 1½ HP Miscellaneous Motor Controller". The TEST and RESET buttons are additionally labeled ON and OFF.

Meter Socket Accessories - Jumper Covers

There are listed meter socket covers with built-in jumpers rated up to 200 amps. The marking has been changed from "Temporary Jumper Cover Accessory" to "Jumper Cover Accessory". They will be accepted as permanent circuit conductors. At this time there is only one manufacturer (Ekstrom Industries) with this approval.

Household, residential, and commercial fire/burglar alarm control units

The appropriate authority having jurisdiction (building or fire-protection) must be consulted prior to installing fire or burglar alarm control systems and must determine which type of control unit is required. It should be noted that most local fire departments would <u>not</u> approve the use of household fire warning system control units in commercial occupancies since this is a violation of the fire code. The National Fire Alarm Code, NFPA 72 (adopted in the Uniform Fire Code as an Appendix Standard) is enforceable in most jurisdictions.

Listed alarm equipment, when installed per its installation instructions, has been investigated for basic electrical safety from shock and fire hazards in compliance with intent of NEC 90-1(a)-**Practical Safeguarding** and NEC 90-7-**Examination of Equipment for Safety**. Electrical inspectors, per NEC 110-3(b)-**Installation and Use**, will insure that this equipment is installed in accordance with its installation instructions as far as wiring methods, circuit requirements, and equipment location and mounting.

The National Electrical Code, NFPA 70 (NEC) does not include requirements that differ between household and commercial alarm installations. Alarm control units can be considered to comply with the basic electrical safety requirements of the NEC sections above, regardless of whether they are used in commercial or residential applications. Final acceptance of the alarm control unit (type) is determined by the building or fire-protection official.

Baptisteries with associated electrical equipment

These pools will be evaluated to the same NEC requirements as a hot tub, spa, or swimming pool with similar electrical equipment. A baptistery will be required to comply with the NEC Article 680 section that best describes the installation.

● Remodeled 3-wire electric range and clothes dryer circuits

Existing 3-wire electric range and clothes dryer circuits will be permitted to be moved or relocated in the existing 3-wire configuration if the installation is in compliance with NEC 250-60. These existing circuits will also be permitted to be extended, unless new 4-wire circuits in compliance with NEC 250-57 and NEC 250-59 can be installed without removing significant portions of the existing finished surfaces of the building.

● Relays installed in auxiliary gutters or wireways

Relays and similar equipment are not permitted to be installed in auxiliary gutters or wireways. NEC 374-1-**Auxiliary Gutters-Use** states auxiliary gutters *"may enclose conductors or busbars but shall not be used to enclose switches, overcurrent devices, appliances, or other similar equipment"*. Wireways are troughs in which cables and conductors are laid. They clearly meet the definition of a raceway, and raceways are *"designed expressly for holding wires, cables, or busbars, with additional functions as permitted in this Code"*. Nothing in NEC Article 362-**Metal Wireways and Nonmetallic Wireways** would permit wireways to contain anything except electric wires, cables, splices, and taps.

● Boarding homes and assisted living facilities

Under our electrical installations laws, boarding homes and assisted living facilities are classified as health care occupancies and not dwelling units. Electrical inspection fees will be based on the WAC 296-46-910(2) Commercial/Industrial section of the fee schedule. Electrical plan review is required for the work done on these facilities.

For the purpose of electrical load calculations, boarding home and assisted living facility loads can be evaluated per NEC 220-32-**Optional Calculation-Multifamily Dwelling** only if the units meet all of the electrical requirements of a "dwelling unit". This includes branch circuits in compliance with NEC 210-25-**Common Area Branch Circuits**, all required outlets from NEC 210 Part C-**Required Outlets**, and (in addition to the 2 small appliance circuits) a branch circuit that serves permanently installed cooking equipment.

Loads for common areas of these facilities, and apartment units not meeting the above requirements, must be calculated per NEC Article 220 Parts A and B. The demand factors of *"Hotels and Motels, including apartment houses without provision for cooking by tenants"* may be applied to the apartments. Location of receptacle outlets in the apartments must comply with NEC 210-60-**Guest Rooms**, the exception may be applied to permanent furniture layout.

● Wiring methods in open bottom handholes

All single conductors, splices, or taps installed in open bottom handholes must be of a type identified and approved for direct burial. The requirements for insulated conductors for general wiring are in NEC 310-13-**Conductor Constructions and Applications** and its referenced tables. NEC 300-3(a)-**Single Conductors** states that single conductors *"shall only be permitted to be installed where part of a recognized wiring method of Chapter 3"*. NEC 300-15(a)-**Box or Conduit Body** requires a box or conduit body *"be installed at each conductor splice connection point, outlet, switch point, junction point, or pull point for the connection of conduit"*. Open bottom handholes are not listed electrical equipment, conduit bodies, or boxes and not part of a recognized wiring method of NEC Chapter 3. Any single conductors, taps, or splices installed in such handholes would have to be suitable for conditions outside of an approved raceway system. The only single conductor wiring method of NEC Chapter 3 that complies is direct burial.

This requirement is consistent with Department of Transportation specifications for similar installations within their jurisdiction.